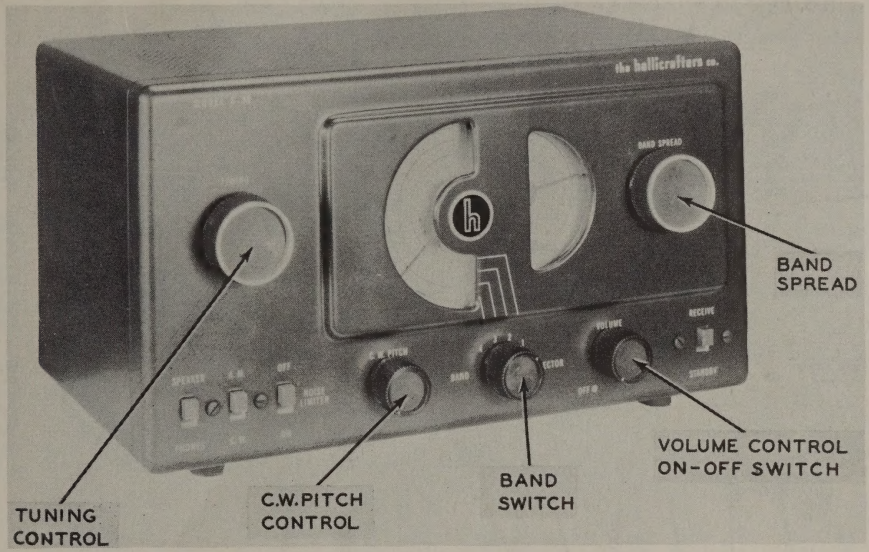



HALLICRAFTERS MODEL S-38

| | |
|---|---|
| TRADE NAME | Hallicrafters Model S-38 |
| MANUFACTURER | Hallicrafters Co., 2611 S. Indiana Ave., Chicago, Illinois |
| TYPE SET | AC - DC Superheterodyne - 4 Band Communications Receiver |
| TUBES (SIX) | Types 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 12SQ7GT BFO-ANL, 35L6GT Power Output, 35Z5GT Rectifier. |
| POWER SUPPLY | 105-125 Volts AC-DC Rating .245 Amps. @ 117 Volts AC |
| TUNING RANGE | Band #1- 540-1650KC Band #2- 1650KC-5.0MC Band #3 5.0MC-14.5MC Band #4- 13.5MC-32.0MC |

ALIGNMENT INSTRUCTIONS

| DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| NONE | High side to stator plates of rear section of tuning gang. Low side to "G" on antenna strip. | 455KC | "1" | 1000KC | Across voice coil | A1,A2, A3,A4. | Adjust for maximum output. Repeat adjustment. |
| " | " | " | " | " | " | BFO Slug | Turn off 400Ω modulation on signal generator. Set CW/AM switch at CW. Remove pitch control knob and adjust slotted screw shaft for zero beat. |
| 390Ω carbon res. | High side to "A1" on antenna strip. Low side to "G" on on antenna strip. | 30MC | "4" | 30MC | " | A5,A6 | Adjust for maximum output. Rock gang slightly when adjusting A6. |
| " | " | 14MC | "3" | 14MC | " | A7,A8 | Adjust for maximum output. Rock gang slightly when adjusting A8. |
| " | " | 5MC | "2" | 5MC | " | A9 | Adjust for maximum output. |
| " | " | 1.8MC | " | 1.8MC | " | A10 | Adjust for maximum output and repeat A9 at 5MC. |
| " | " | 5MC | " | 5MC | " | A11 | Adjust for maximum output. Rock gang slightly. |
| " | " | 1500KC | "1" | 1500KC | " | A12 | Adjust for maximum output. |
| " | " | 600KC | " | 600KC | " | A13 | Adjust for maximum output and repeat A12 at 1500KC. |
| " | " | 1500KC | " | 1500KC | " | A14 | Adjust for maximum output. Rock Gang Slightly. |

Set receiver controls as follows: "Speaker-Phones" switch at speaker; Volume control at full clockwise (maximum); CW/AM switch at "AM" (except for BFO adjustment); noise limiter switch at "off"; bandspread tuning at "0" (min. cap.); "standby-receive" switch at receive. Adjust output of signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

**HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana**

# PARTS LIST AND DESCRIPTIONS

## TUBES

| ITEM No. | USE | REPLACEMENT DATA: HALLICRAFTERS PART No. | REPLACEMENT DATA: STANDARD REPLACEMENT | RMA BASE TYPE | INSTALLATION NOTES |
|---|---|---|---|---|---|
| 1 | Converter | 12SA7GT | 12SA7GT | 8AD | |
| 2 | IF Amp. | 12SK7GT | 12SK7GT | 8N | |
| 3 | Det.-AVC-AF | 12SQ7GT | 12SQ7GT | 8Q | |
| 4 | BFO-ANL | 12SQ7GT | 12SQ7GT | 8Q | |
| 5 | Power Output | 35L6GT | 35L6GT | 7AC | |
| 6 | Rectifier | 35Z5GT | 35Z5GT | 6AD | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING: CAP. | RATING: VOLT | REPLACEMENT DATA: HALLICRAFTERS PART No. | MALLORY PART No. | SOLAR PART No. | SPRAGUE PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | IDENTIFICATION CODES AND INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|---|
| 7(A) | 40 | 150 | 45B091 | TC48 | TSSB-40-40-150 | TA-430 | | E44316C | Filter - Red |
| (B) | 30 | 150 | | SN583 | 20-30 | | | | " - Yellow |
| (C) | 30 | 150 | | | M-30-150 | UT-301 | | | " - " |
| (D) | 20 | 25 | | | | CA-25 | | | Cath. Bypass - Blue |
| 8 | .25 | 200 | 46A7254J | TP430 | S-4-25 | TC-2 | 484-.25 | DT4F25 | Line Isolating |
| 9 | .02 | 400 | 46AW203J | TP423 | S-4-02 | TC-12 | 484-.02 | DT482 | Line Bypass |
| 10 | .02 | 600 | 46AY203J | TP412 | S-6-02 | TC-12 | 684-.02 | DT6S2 | 35L6 Plate Bypass |
| 11 | .01 | 400 | 46AW103J | TP421 | S-4-01 | TC-11 | 484-.01 | DT4S1 | Audio Coupling |
| 12 | .005 | 400 | 46AW52MJ | TP408 | S-4-005 | TC-25 | 484-.005 | DT4D5 | " " |
| 13 | .01 | 400 | 46AW102J | TP421 | S-4-01 | TC-11 | 484-.01 | DT4S1 | BFO Plate Bypass |
| 14 | .05 | 200 | 46AW53MJ | TP426 | S-4-05 | TC-15 | 484-.05 | DT4S5 | IF Cath. Bypass |
| 15 | .25 | 200 | 46A7254J | TP430 | S-4-25 | TC-2 | 484-.25 | DT4F25 | Screen Bypass |
| 16 | .02 | 400 | 46AW203J | TP423 | S-4-02 | TC-12 | 484-.02 | DT482 | AVC Filter |
| 17 | .01 | 600 | 46AY103J | TP410 | S-6-01 | TC-11 | 684-.01 | DT6S1 | Ant. Coupling |
| 18 | .05 | 200 | 46AW53MJ | TP426 | S-4-05 | TC-15 | 484-.05 | DT4S5 | RF Bypass Pwr. Supp. |
| 19 | 220 | 500 | CM20A221K | MC240 | MO.5-325 | 1FM-325 | 1468-.00025 | 5W5F25 | RF Bypass Diode |
| 20 | 220 | 500 | CM20A221K | MC240 | MO.5-325 | 1FM-325 | 1468-.00025 | 5W5F25 | BFO Grid Cap. |
| 21 | 470 | 500 | CM20A471K | MC245 | MO.5-35 | 1FM-35 | 1468-.0005 | 5W5F5 | BFO Fixed Trimmer |
| 22 | 2700 | 500 | CM30A272K | MC460 | MW.5-225 | | 1467-.0025 | 1W5D25 | RF Grid Cap. |
| 23 | 220 | 500 | CM20A221K | MC240 | MO.5-325 | 1FM-325 | 1468-.00025 | 5W5F25 | Osc. Grid Cap. |
| 24 | 2700 | 500 | CM30A271J | MC460 | MW.5-225 | | 1467-.0025 | 1W5D25 | Fixed Padder |
| 25 | 510 | 500 | | MC245 | MO.5-35 | 1FM-35 | 1468-.0006 | 5W5T5 | RF Bypass Rect. |
| 26 | 220 | 500 | CM20A221K | MC240 | MO.5-325 | 1FM-325 | 1468-.00025 | 5W5F25 | Audio Plate Bypass |
| 27 | 1200 | 500 | | MC255 | MO.3-21 | 1FM-21 | 1468-.001 | 1W5D1 | Fixed Trimmer |

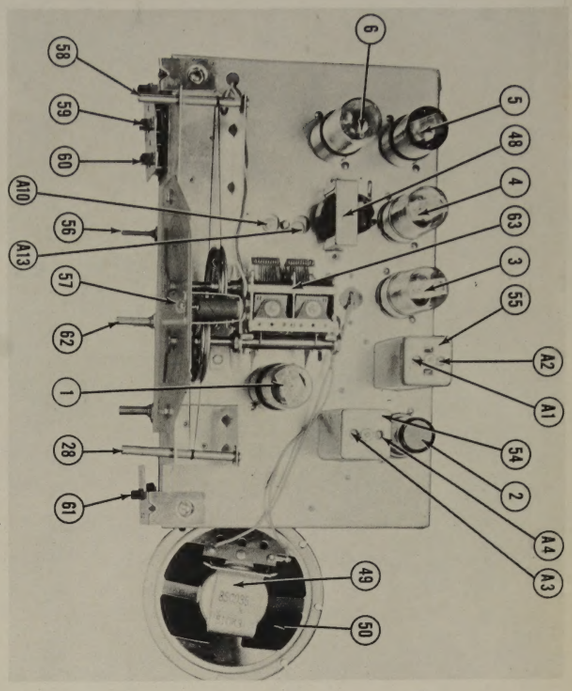
## CONTROLS

| ITEM No. | RATING: RESISTANCE | RATING: WATTS | REPLACEMENT DATA: HALLICRAFTERS PART No. | MALLORY PART No. | IRC PART No. | CLAROSTAT PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|
| 28(A) | 5000Ω | 1 | 25A094 | MR48 | D13-133 | AM-60-2 | Volume Control |
| (B) | Shaft | | Not Req. | Not Req. | A | RS-2 | Attach to 28A per instructions. |
| (C) | Switch | | " " | M25 | 41 | SW-A | " " " " " |

## RESISTORS

| ITEM No. | RATING: RESISTANCE | RATING: WATTS | REPLACEMENT DATA: HALLICRAFTERS PART No. | REPLACEMENT DATA: IRC PART No. | IDENTIFICATION CODES |
|---|---|---|---|---|---|
| 29 | 10KΩ | ½ | RC20AE103M | BTS-10K | Br.-Blk.-Or. Ant. Shunt |
| 30 | 470KΩ | ½ | RC20AE474M | BTS-470K | Yl.-Vi.-Yl. Converter Grid |
| 31 | 47Ω | ½ | RC20AE470M | BW-½-47 | Yl.-Vi.-Blk. Osc. Series Grid |
| 32 | 22KΩ | ½ | RC20AE223M | BTS-22K | Red-Red-Or. Osc. Grid |
| 33 | 2.2 Meg. | ½ | RC20AE225M | BTS-2.2 Meg. | Red-Red-Grn. AVC Network |
| 34 | 47KΩ | ½ | RC20AE473M | BTS-47K | Yl.-Vi.-Or. Diode Load |
| 35 | 470Ω | ½ | RC20AE471K | BTS-470 | Yl.-Vi.-Br. CW AVC Shorting |
| 36 | 47KΩ | ½ | RC20AE473M | BTS-47K | Yl.-Vi.-Or. BFO Grid |
| 37 | 10 Meg. | ½ | RC20AE106M | BTS-10 Meg. | Br.-Blk.-Blue 1st AF Grid |
| 38 | 220KΩ | ½ | RC20AE224M | BTS-220K | Red-Red-Yl. 1st AF Plate Load |
| 39 | 470KΩ | ½ | RC20AE474M | BTS-470K | Yl.-Vi.-Yl. Output Grid |
| 40 | 150Ω | ½ | RC20AE151K | BW-½-150 | Br.-Grn.-Br. Output Cathode |
| 41 | 1000Ω | ½ | RC20AE102M | BTS-1000 | Br.-Blk.-Red Filter |
| 42 | 680Ω | 1 | RC30AF681M | BTA-680 | Blue-Gray-Br. " |

# CHASSIS—TOP VIEW




# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS (CONTINUED)

| | | | | | |
|---|---|---|---|---|---|
| 43 | 22Ω | ½ | RC20AE220M | BW-½-22 | Red-Red-Blk. Surge Limiter |
| 44 | 330Ω | ½ | RC20AE331M | BW-½-330 | Or.-Or.-Br. Pilot Light Shunt |
| 45 | 15Ω | ½ | RC20AE150M | BW-½-15 | Br.-Grn.-Blk. Headphone Shunt |
| 46 | 390Ω | ½ | RC20AE391K | BW-½-390 | Or.-White-Br. IF Cathode |
| 47 | 470Ω | ½ | RC20AE471K | BTS-470 | Yl.-Vi.-Br. BFO Plate Load |

## TRANSFORMER (OUTPUT)

| ITEM No. | RATING: IMPEDANCE PRI. | RATING: IMPEDANCE SEC. | RATING: DC RES. PRI. | RATING: DC RES. SEC. | REPLACEMENT DATA: HALLICRAFTERS PART No. | REPLACEMENT DATA: STANCOR PART No. | REPLACEMENT DATA: THORDAR'N PART No. | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|---|
| 48 | 3180Ω | 3.1Ω | 170Ω | .6Ω | 55A078 | A-3878 | T-12S42† | | †Drill new mounting holes. |

## SPEAKER

| ITEM No. | RATINGS: FIELD | RATINGS: VC IMP. | REPLACEMENT DATA: HALLICRAFTERS PART No. | REPLACEMENT DATA: JENSEN PART No. | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|
| | PM | 3.1Ω | | | | |
| 49 | CONE DIA. | VC DIA. | 85C035 | SP-10S | | |
| 50 | 4-3/16" | 5/8" | NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT. | | | |

## R F COILS

| ITEM No. | USE | DC RES. PRI. | DC RES. SEC. | REPLACEMENT DATA: HALLICRAFTERS PART No. | REPLACEMENT DATA: MEISSNER PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|
| 51(A) | Band 1 Ant. Coil | 26Ω | 4.8Ω | 51C821* | | *Wound on same coil form with Bands 2,3. |
| 51(B) | " 2 " " | 1Ω | 1Ω | | | " " " " " " " 1,3. |
| 51(C) | " 3 " " | 1Ω | .1Ω | | | " " " " " " " 1,2. |
| 52 | " 4 " " | .5Ω | 0Ω | 51C818 | | |
| 53(A) | " 1 Osc. " | | 2.8Ω | 51C822** | | **Wound on coil form with bands 2,3,4. |
| 53(B) | " 2 " " | | 1Ω | | | " " " " " " 1,3,4. |
| 53(C) | " 3 " " | | 0Ω | | | " " " " " " 1,2,4. |
| 53(D) | " 4 " " | .1Ω | 0Ω | | | " " " " " " 1,2,3. |
| 54 | Input IF | 27Ω | 25.5Ω | 50C183 | 16-6658 | |
| 55 | Output IF | 24.5Ω | 24.5Ω | 50B184 | 16-6660 | |
| 56 | BFO Osc. Coil | | 6Ω | 54B031 | | |

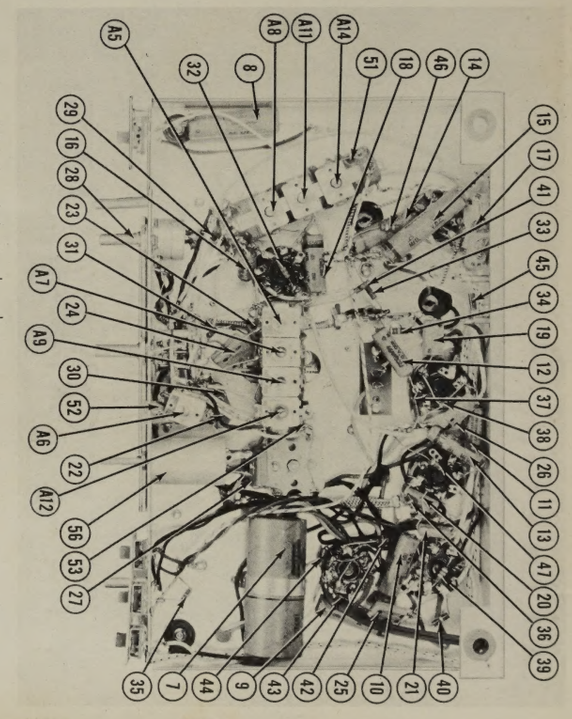
## DIAL LIGHT

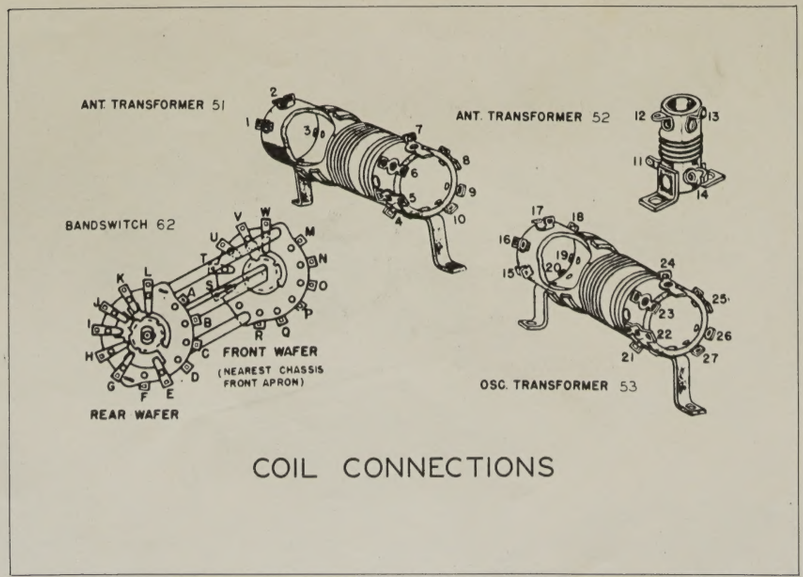
| ITEM No. | BASE TYPE | VOLTS | AMPS. | BEAD COLOR | REPLACEMENT DATA: HALLICRAFTERS PART No. | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|
| 57 | bayonet | 6-8 | 0.15 | brown | 39A004 | | Type 47 |

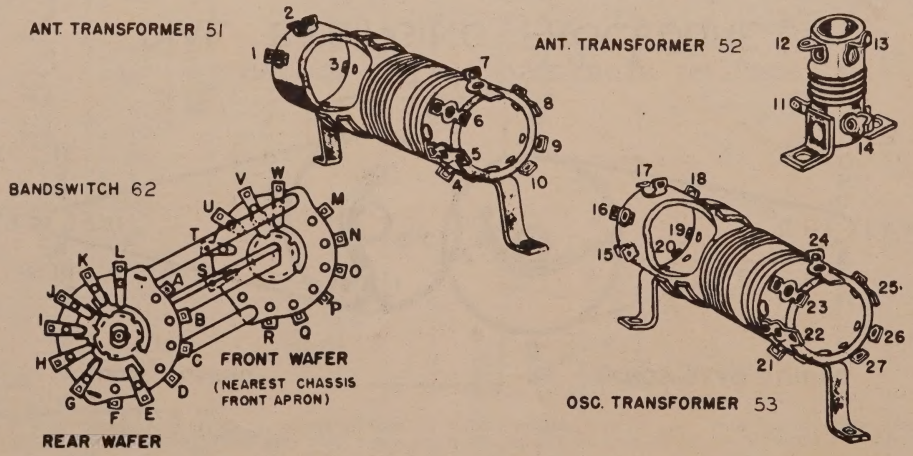
## MISCELLANEOUS

| ITEM No. | PART NAME | HALLICRAFTERS PART No. | NOTES |
|---|---|---|---|
| 58 | Switch | 60A243 | "SPEAKER-PHONES" SPDT |
| 59 | " | 60A245 | "AM-CW" SPDT |
| 60 | " | 60A244 | "NOISE LIMITER" SPST |
| 61 | " | 60A244 | "RECEIVE STANDBY" SPST |
| 62 | " | 60A240 | 4 Position Bandswitch |
| 63 | Tuning Cap. | 46C132 | 2 Gang Main & Band Spread Var. Cap. |
| | Trimmer | 44B159 | A5,A7,A9,A12 Osc. Adjustments |
| | " | 44B129 | A8,A11,A14 Ant. Adjustments |
| | A6 " | 44A039 | Antenna Trimmer |
| | " | 44A152 | A10,A13 Osc. Padders |
| | Knob | 15A049 | Volume and Band Switch |
| | " | 15A056 | C.W. Pitch Control |
| | " | 15A047 | Tuning and Bandspread Controls |
| | Calibrated Dial | 83B257 | |
| | Dial Window | 22B157 | Glass |

# CHASSIS—BOTTOM VIEW






# COIL CONNECTIONS

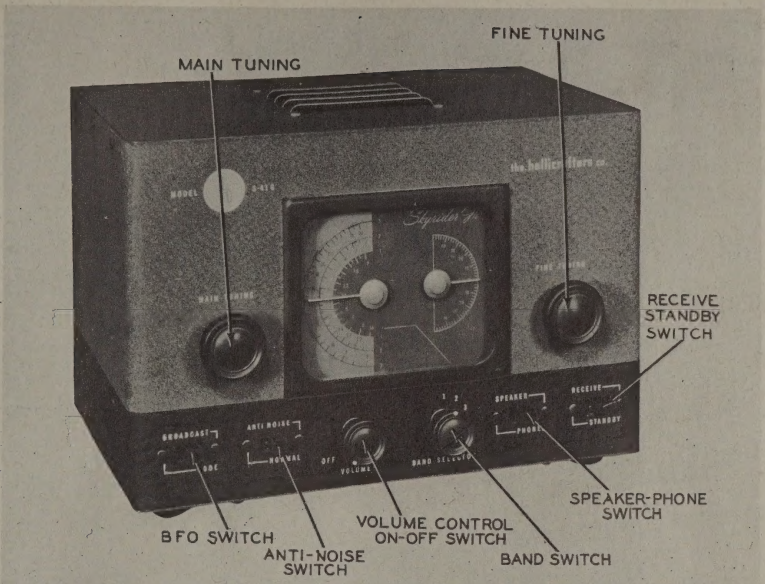
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 12SK7GT | 0V. | 37.5VAC | 3.5V.DC | 0V. | 3.5V.DC | 100V.DC | 25.5V.AC | 100V.DC |
| 3 | 12SQ7GT | 0V. | -.7V.DC | 0V. | -.47V.DC | -.47V.DC | 57V.DC | 12.5V.AC | 0V. |
| 4 | 12SQ7GT | 0V. | 0V. | 0V. | 0V. | 0V. | 100V.DC | 37.5VAC | 49.5V.AC |
| 5 | 35L6GT | 0V. | 85V.AC | 109V.DC | 100V.DC | 0V. | 0V. | 49.5VAC | 6.1V.DC |
| 6 | 35Z5GT | 116V.DC | 117V.AC | 112V.AC | 116V.DC | 112V.AC | 0V. | 85V.AC | 117V.DC |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 12SK7GT | 0Ω | 39Ω | 350Ω | 450Ω | 350Ω | 125KΩ | 27Ω | 125KΩ |
| 3 | 12SQ7GT | 0Ω | 7.5MEG | 0Ω | 420KΩ | 420KΩ | 450KΩ | 13.5Ω | 0Ω |
| 4 | 12SQ7GT | 0Ω | .2Ω | 2Ω | INF | INF | 125KΩ | 39Ω | 52Ω |
| 5 | 35L6GT | 0Ω | 82Ω | 125KΩ | 125KΩ | 425KΩ | INF | 52Ω | 145Ω |
| 6 | 35Z5GT | 125KΩ | 105Ω | 105Ω | 125KΩ | 105Ω | 0Ω | 82Ω | 125KΩ |

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HALLICRAFTERS
MODELS S-41-G, S-41-W




HALLICRAFTERS MODEL S-41G

| | |
|---|---|
| **TRADE NAME** | Hallicrafters, Models S-41G, S-41W |
| **MANUFACTURER** | The Hallicrafters Co., 2611 S. Indiana Ave., Chicago, Ill. |
| **TYPE SET** | AC-DC Operated 3-Band Superheterodyne Communications Receiver |
| **TUBES (SIX)** | Types 12SA7 Converter, 12SK7 IF Amp., 12SQ7GT Det.-AVC-AF, 12SQ7GT BFO-ANL, 35L6GT Power Output, 35Z5GT Rectifier |
| **POWER SUPPLY** | 105-125 Volts AC-DC — RATING .250 Amp. @ 117 Volts AC |
| **TUNING RANGE—BROADCAST** | 550-2100KC. — **SHORT WAVE** 2.1-7.7 MC, 7.7-30.0 MC |

**ALIGNMENT INSTRUCTIONS**

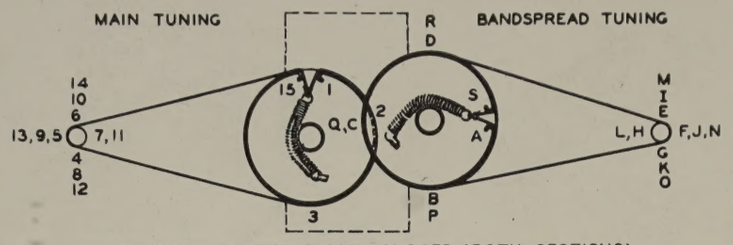
To set pointer, turn variable fully closed and set pointer at the extreme low freq. end of the dial. use isolation transformer if available. If not, connect capacitor in series with the low side of the signal generator and chassis. Set volume control at maximum volume and keep input from signal generator no higher than is necessary to obtain output reading. Keep bandspread pointer at "0" while making all adjustments. Have BFO switch "on" only while adjusting A5. Use insulated alignment screwdriver for adjusting.

| DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| Direct. | High side to pin #8 of 6SA7. Low side to chassis. | 455KC | Band 1 | High freq. end. | Across voice coil | A1,A2, A3,A4. | Adjust for maximum output If isolation trans. is not used use .001 MFD. capacitor as dummy Ant. to reduce hum modulation. |
| Direct. | " | " | " | " | " | A5 | Adjust for zero beat. |
| 330Ω | High side to Ant. terminal. Low side to ground terminal. | 600KC | " | 600KC | " | A6 | Adjust for maximum output. |
| 330Ω | " | 1600KC | " | 1600KC | " | A7 | " |
| 330Ω | " | " | " | Tune for maximum output. | " | A8 | " |
| 330Ω | " | 2.4MC | Band 2 | 2.4MC | " | A9 | " |
| 330Ω | " | 7.0MC | " | 7.0MC | " | A10 | " |
| 330Ω | " | " | " | Tune for maximum output. | " | A11 | Rock variable and adjust for maximum output. |
| 330Ω | " | 28.0MC | Band 3 | 28.0MC | " | A12 | Adjust for maximum output. |
| 330Ω | " | 28.0MC | " | Tune for maximum output. | " | A13 | Rock variable and adjust for maximum output. |

**HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana**

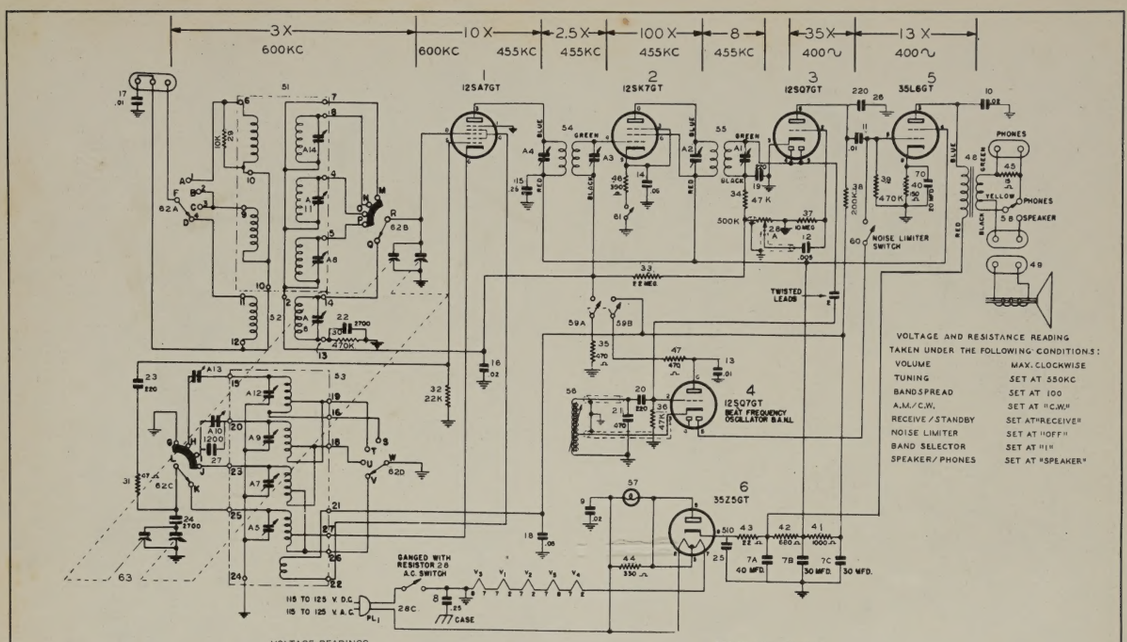
To restring the main tuning dial cord, cut a 14" length of 30 lb. test dial cord and tie one end of the tension spring of the main tuning capacitor drive pulley at position "1" on the diagram. Following the numbers 1 through 15, wind the cord on the pulley and knob drive shaft. At position "15," stretch the tension spring and tie the cord securely. Cut off the excess cord. Note that two complete turns are wound on the knob drive shaft.

To restring the bandspread tuning dial cord, cut a 16" length of dial cord and follow the procedure as explained above, except start at position "A" on the diagram and proceed through position "S". Note that the knob drive shaft has two complete turns.




TUNING CAPACITOR FULLY CLOSED (BOTH SECTIONS).

# DIAL STRINGING PROCEDURE




VOLTAGE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 12SA7GT | 0V. | 25.5VAC | 100V.DC | 90V.DC | -5.5V.DC | 0V. | 12.5 VAC | 0V. |
| 2 | 12SK7GT | 0V. | 37.5VAC | 3.5V.DC | 0V. | 3.5V.DC | 100V.DC | 25.5VAC | 100V.DC |
| 3 | 12SQ7GT | 0V. | -7V.DC | 0V. | -.47V.DC | -.47V.DC | 57 V.DC | 12.5 VAC | 0V. |
| 4 | 12SQ7GT | 0V. | 0V. | 0V. | 0V. | 0V. | 100V.DC | 37.5VAC | 49.5VAC |
| 5 | 35L6GT | 0V. | 85V.AC | 109V.DC | 100V.DC | 0V. | 0V. | 49.5 VAC | 6.1V.DC |
| 6 | 35Z5GT | 116V.DC | 117V.AC | 112V.AC | 116V.DC | 112V.AC | 0V. | 85V.AC | 117V.DC |

RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 12SA7GT | 0Ω | 27Ω | 125KΩ | 125KΩ | 20KΩ | 4Ω | 13.5Ω | 450Ω |
| 2 | 12SK7GT | 0Ω | 39Ω | 350Ω | 450Ω | 350Ω | 125KΩ | 27Ω | 125KΩ |
| 3 | 12SQ7GT | 0Ω | 75MEG | 0Ω | 420KΩ | 420KΩ | 450KΩ | 13.5Ω | 0Ω |
| 4 | 12SQ7GT | 0Ω | .2Ω | 2Ω | INF | INF | 125KΩ | 39Ω | 52Ω |
| 5 | 35L6GT | 0Ω | 82Ω | 125KΩ | 125KΩ | 425KΩ | INF | 52Ω | 145Ω |
| 6 | 35Z5GT | 125KΩ | 105Ω | 105Ω | 125KΩ | 105Ω | 0Ω | 82Ω | 125KΩ |

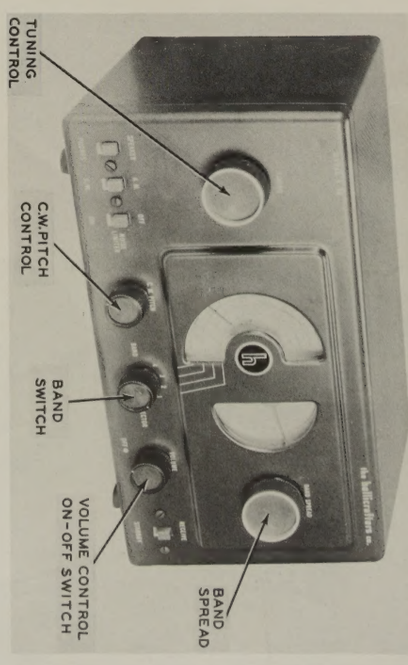
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

## HALLICRAFTERS MODEL S-38

TRADE NAME — Hallicrafters Model S-38
MANUFACTURER — Hallicrafters Co., 2611 S. Indiana Ave., Chicago, Illinois
TYPE SET — AC-DC Superheterodyne - 4 Band Communications Receiver
TUBES (SIX) — Types 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 12SQ7GT BFO-AVL, 35L6GT Power output, 35Z5GT Rectifier.
POWER SUPPLY — 105-125 Volts AC-DC Rating: 245 Amps @ 117 Volts AC
TUNING RANGE — Band #1: 540-1650KC Band #2: 1650-5000KC Band #3: 5.0-14.5MC Band #4: 13.5MC-28.0MC

HALLICRAFTERS MODEL S-38




| DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| NONE | High side to "ANT" & low side to "GND" on antenna strip. | 455KC | "1" | 1000KC | Across voice coil | A1,A2, A5,A6 | Adjust for maximum output. Repeat adjustment. |
| " | High side to stator plates of tuning capacitor. Low side to "GND" on antenna strip. | " | " | " | " | " | " |
| 330Ω Carbon Res. | High side to "ANT" on antenna strip. Low side to "GND" on antenna strip. | 30MC | "4" | 30MC | " | A5,A6 | Adjust for maximum output. Rock gang slightly when adjusting A6. |
| " | " | 14MC | "3" | 14MC | " | A7,A8 | Adjust for maximum output. Rock gang slightly when adjusting A8. |
| " | " | 5MC | "2" | 5MC | " | A9 | Adjust for maximum output. |
| " | " | 1.8MC | " | 1.8MC | " | A10 | Adjust for maximum output. |
| " | " | 5MC | "1" | 5MC | " | A11 | Adjust for maximum output. Rock gang slightly. |
| " | " | 1500KC | " | 1500KC | " | A12 | Adjust for maximum output. |
| " | " | 600KC | " | 600KC | " | A13 | Adjust for maximum output. |
| " | " | 1500KC | " | 1500KC | " | A14 | Set to repeat at 1500KC. Rock gang slightly. |

ALIGNMENT INSTRUCTIONS — HALLICRAFTERS MODEL S-38

Set receiver controls as follows: "Speaker/Phones" switch at speaker; Volume control at full clockwise (maximum); CW/AM switch at "AM" (except for BFO adjustment); noise limiter switch at "off"; Bandspread tuning at "0" (min. cap.); "Standby-Receive" switch at "receive".
Adjust output of signal generator to highest than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

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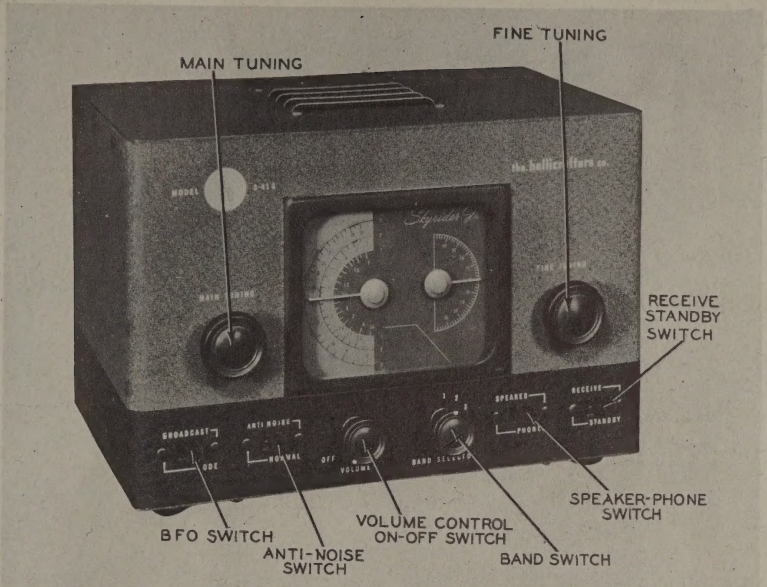
PHOTOFACT* Folder

HALLICRAFTERS MODEL S-38

HALLICRAFTERS MODEL S-38




HALLICRAFTERS MODEL S-41G

| | |
|---|---|
| TRADE NAME | Hallicrafters, Models S-41G, S-41W |
| MANUFACTURER | The Hallicrafters Co., 2611 S. Indiana Ave., Chicago, Ill. |
| TYPE SET | AC-DC Operated 3-Band Superheterodyne Communications Receiver |
| TUBES (SIX) | Types 12SA7 Converter, 12SK7 IF Amp., 12SQ7GT Det.-AVC-AF, 12SQ7GT BFO-ANL, 35L6GT Power Output, 35Z5GT Rectifier |
| POWER SUPPLY | 105-125 Volts AC-DC RATING .250 Amp. @ 117 Volts AC |
| TUNING RANGE—BROADCAST | 550-2100KC. SHORT WAVE 2.1-7.7 MC, 7.7-30.0 MC |

**ALIGNMENT INSTRUCTIONS**

To set pointer, turn variable fully closed and set pointer at the extreme low freq. end of the dial. Use isolation transformer if available. If not, connect capacitor in series with the low side of the signal generator and chassis. Set volume control at maximum volume and keep input from signal generator no higher than is necessary to obtain output reading. Keep bandspread pointer at "0" while making all adjustments. Have BFO switch "on" only while adjusting A5. Use insulated alignment screwdriver for adjusting.

| DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| Direct. | High side to pin #8 of 6SA7. Low side to chassis. | 455KC | Band 1 | High freq. end. | Across voice coil | A1,A2, A3,A4. | Adjust for maximum output. If isolation trans. is not used use .001 MFD. capacitor as dummy Ant. to reduce hum modulation. |
| Direct. | " | " | " | " | " | A5 | Adjust for zero beat. |
| 330Ω | High side to Ant. terminal. Low side to ground terminal. | 600KC | " | 600KC | " | A6 | Adjust for maximum output. |
| 330Ω | " | 1600KC | " | 1600KC | " | A7 | " |
| 330Ω | " | " | " | Tune for max-imum output. | " | A8 | " |
| 330Ω | " | 2.4MC | Band 2 | 2.4MC | " | A9 | " |
| 330Ω | " | 7.0MC | " | 7.0MC | " | A10 | " |
| 330Ω | " | " | " | Tune for max-imum output. | " | A11 | Rock variable and adjust for maximum output. |
| 330Ω | " | 28.0MC | Band 3 | 28.0MC | " | A12 | Adjust for maximum output. |
| 330Ω | " | 28.0MC | " | Tune for max-imum output. | " | A13 | Rock variable and adjust for maximum output. |

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# PARTS LIST AND DESCRIPTIONS

## TUBES

| ITEM No. | USE | REPLACEMENT DATA: HALLICRAFTERS PART No. | REPLACEMENT DATA: STANDARD REPLACEMENT | RMA BASE TYPE | INSTALLATION NOTES |
|---|---|---|---|---|---|
| 1 | Converter | 12SA7 | 12SA7 | 8R | |
| 2 | IF Amp. | 12SK7 | 12SK7 | 8N | |
| 3 | Det.-AVC-AF | 12SQ7GT | 12SQ7GT | 8Q | |
| 4 | BFO-A.N.L. | 12SQ7GT | 12SQ7GT | 8Q | |
| 5 | Power Output | 35L6GT | 35L6GT | 7AC | |
| 6 | Rectifier | 35Z5GT | 35Z5GT | 6AD | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING: CAP. | RATING: VOLT | REPLACEMENT DATA: HALLICRAFTERS PART No. | SOLAR PART No. | SPRAGUE PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | IDENTIFICATION CODES AND INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|---|
| 7A | 40 | 150 | 45B087 | DSB-403020-150 | EL-443 | PRSA150-40-30/25-20 | EZ43315C | | Filter - Red |
| B | 30 | 150 | | | | 125-20 | | | " - Yellow |
| C | 30 | 150 | | | | PRS150-30 | | | " - " |
| D | 20 | 25 | | M-25-25 | | | | | Cath. Bypass - Blue |
| 8 | .02 | 400 | | S-4-02 | TC-12 | 484-02 | DT4S2 | TP423 | Line Filter |
| 9 | .25 | 200 | | S-4-25 | TC-2 | 484-.25 | DT4P25 | TP430 | Cabinet Isolation |
| 10 | .02 | 600 | | S-6-02 | TC-12 | 684-02 | DT4S2 | TP412 | Output Plate Bypass |
| 11 | .01 | 400 | | S-4-01 | TC-11 | 484-01 | DT4S1 | TP421 | Audio Coupling |
| 12 | .005 | 600 | | S-6-005 | TC-25 | 684-005 | DT6D5 | TP408 | " " |
| 13 | .05 | 200 | | S-4-05 | TC-15 | 484-05 | DT4S5 | TP426 | IF Cath. Bypass |
| 14 | .02 | 400 | | S-4-02 | TC-12 | 484-02 | DT4S2 | TP423 | AVC Filter |
| 15 | .25 | 200 | | S-4-25 | TC-2 | 484-.25 | DT4P25 | TP430 | RF Bypass Pwr. Supp. |
| 16 | .05 | 200 | | S-4-05 | TC-15 | 484-05 | DT4S5 | TP426 | RF Screen Bypass |
| 17 | .01 | 400 | | S-4-01 | TC-11 | 484-01 | DT4S1 | TP421 | Ext. Ground Isolation |
| 18 | 250 | 500 | | MO.5-325 | 1FM-325 | 1468-00025 | 5W5T25 | MC240 | IF Bypass Diode |
| 19 | 200 | 500 | | MO.5-32 | 1FM-32 | 1468-0002 | 5W5T2 | MC237 | BF Osc. Grid |
| 20 | 25 | | | | | | | | RF Coupling Cer. |
| 21 | 50 | 500 | | MO.5-45 | 1FM-45 | 1468-00005 | 5W5Q5 | MC225 | Osc. Grid Capacitor |
| 22 | 240 | 500 | | MO.5-325 | 1FM-325 | 1468-00025 | 5W5T25 | MC240 | Audio Plate Bypass* |
| 23 | 500 | 500 | | MO.5-35 | 1FM-35 | 1468-0005 | 5W5T5 | MC245 | Fixed Trimmer* |

*Not used in all models.

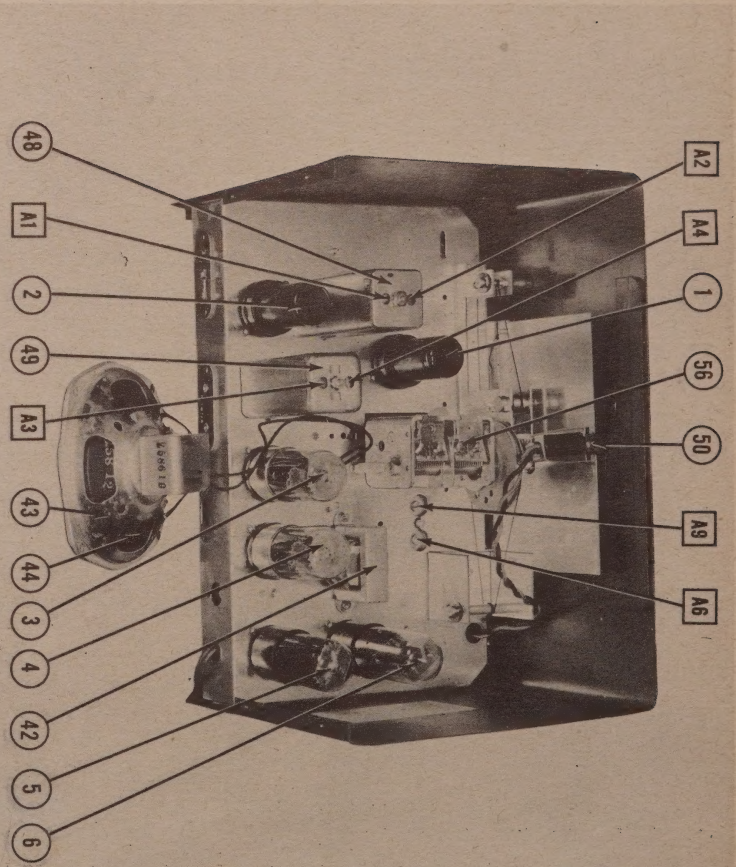
## CONTROLS

| ITEM No. | RATING*: RESISTANCE | RATING*: WATTS | REPLACEMENT DATA: HALLICRAFTERS PART No. | MALLORY PART No. | IRC PART No. | CLAROSTAT PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|
| 24A | 500KΩ | 1 | | MR48 | D11-133 | M-58-S | Volume Control. |
| B | Shaft | | | Not Req. | A | Not Req. | Attach to 24A per instructions |
| C | Switch | | | M26 | 41 | SW-A | " " " " " |

## RESISTORS

| ITEM No. | RATING: RESISTANCE | RATING: WATTS | REPLACEMENT DATA: HALLICRAFTERS PART No. | REPLACEMENT DATA: IRC PART No. | IDENTIFICATION CODES |
|---|---|---|---|---|---|
| 25 | 100Ω | ½ | | BTS-100K | Br.-Blk.-Yl. Converter Grid |
| 26 | 47Ω | ½ | | BW-½-47 | Yl.-Vi.-Blk. Parasitic Suppressor |
| 27 | 20KΩ | ½ | | BTS-22K | Red-Blk.-Or. Oscillator Grid |
| 28 | 300Ω | ½ | | BW-½-330 | Or.-Blk.-Br. IF Cathode |
| 29 | 2 Meg. | ½ | | BTS-2.2 Meg. | Red-Blk.-Grn. AVC Network |
| 30 | 47KΩ | ½ | | BTS-47K | Yl.-Vi.-Or. RF Filter |
| 31 | 10 Meg. | ½ | | BTS-10 Meg. | Br.-Blk.-Blue 1st AF Grid |
| 32 | 240KΩ | ½ | | BTS-220K | Red-Yl.-Yl. " " Plate Load |
| 33 | 470KΩ | ½ | | BTS-470K | Yl.-Vi.-Yl. Output Grid |
| 34 | 150Ω | ½ | | BW-½-150 | Br.-Grn.-Br. " Cathode |
| 35 | 15Ω | ½ | | BW-½-15 | Br.-Grn.-Blk. Head Phone Shunt |
| 36 | 470Ω | ½ | | BTS-470 | Yl.-Vi.-Br. BFO Plate Load |
| 37 | 47KΩ | ½ | | BTS-47K | Yl.-Vi.-Or. " Grid |
| 38 | 390Ω | ½ | | BW-½-390 | Or.-White-Br. Pilot Light Shunt |
| 39 | 27Ω | ½ | | BW-½-27 | Red-Vi.-Blk. Surge Limiter |
| 40 | 750Ω | ½ | | BTS-680 | Vi.-Grn.-Br. Filter |
| 41 | 1000Ω | ½ | | BTS-1000 | Br.-Blk.-Red " |

# CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (OUTPUT)

| ITEM No. | RATING | | | | REPLACEMENT DATA | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | IMPEDANCE | | DC RES. | | HALLICRAFTERS PART No. | STANCOR PART No. | THORDAR'N PART No. | | |
| | PRI. | SEC. | PRI. | SEC. | | | | | |
| 42 | 22000Ω | 3.3Ω | 160Ω | .55Ω | Part of 85C033 | A-3876 | T22S45 | | |

## SPEAKER

| ITEM No. | RATINGS | | REPLACEMENT DATA | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|
| | | | HALLICRAFTERS PART No. | JENSEN PART No. | | |
| | FIELD | VC IMP. | | ST-105 | | |
| 43 | PM | 3.3Ω | 85C033 | Mod.P5-X | | |
| | CONE DIA. | VC DIA. | | | | |
| 44 | 4½" | ½" | NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT. | | | |

## R F COILS

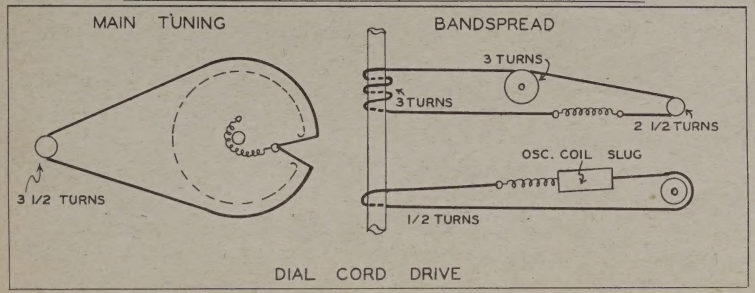
| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|
| | | PRI. | SEC. | HALLICRAFTERS PART No. | MEISSNER PART No. | |
| 45A | Ant. Coil BC | 28Ω | 3.5Ω | | | Items 45A, 45B, 45C wound on same form |
| 45B | " " Band 2 | 1Ω | .5Ω | | | |
| 45C | Ant. Coil Band 3 | 1Ω | 0Ω | | | |
| 46A | Osc. Coil BC | 2Ω | | | | Items 46A, 46B, 46C wound on same form |
| 46B | " " B2 | .6Ω | | | | |
| 46C | " " B3 | 0Ω | | | | |
| 47 | BFO Coil | 5Ω | | | | |
| 48 | Input IF | 24Ω | 23Ω | E50-183 | 16-8658 | |
| 49 | Output IF | 21Ω | 21.5Ω | G50C184 | 16-8660 | |

## DIAL LIGHT

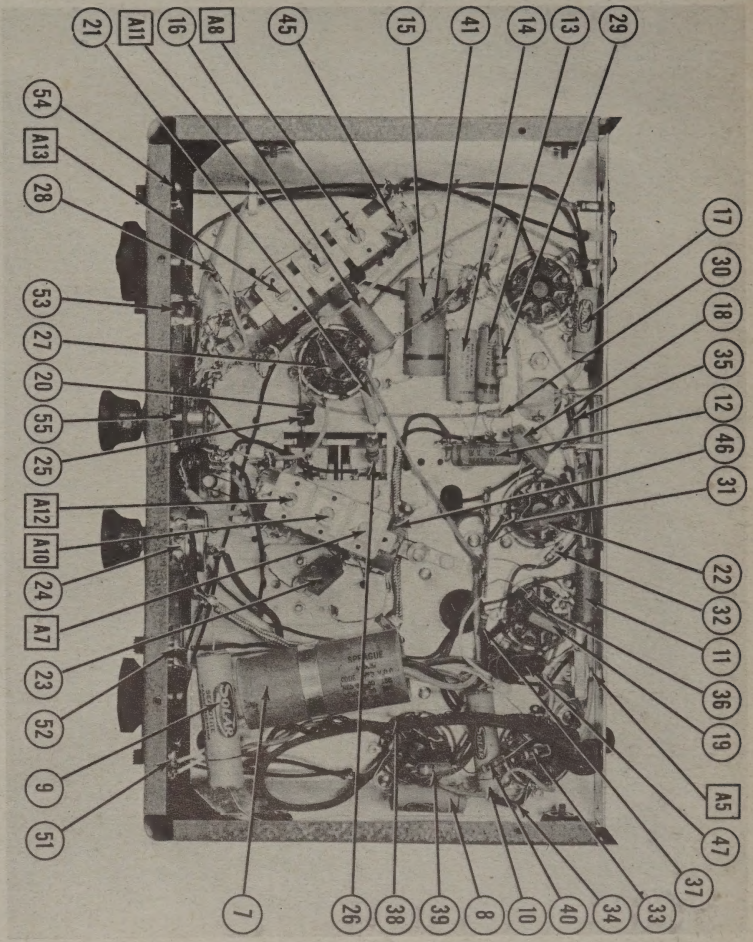
| ITEM No. | BASE TYPE | VOLTS | AMPS. | BEAD COLOR | REPLACEMENT DATA | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|
| | | | | | HALLICRAFTERS PART No. | | |
| 50 | Bayonet | 6-8 | 0.15 | Brown | | | Type 47 |

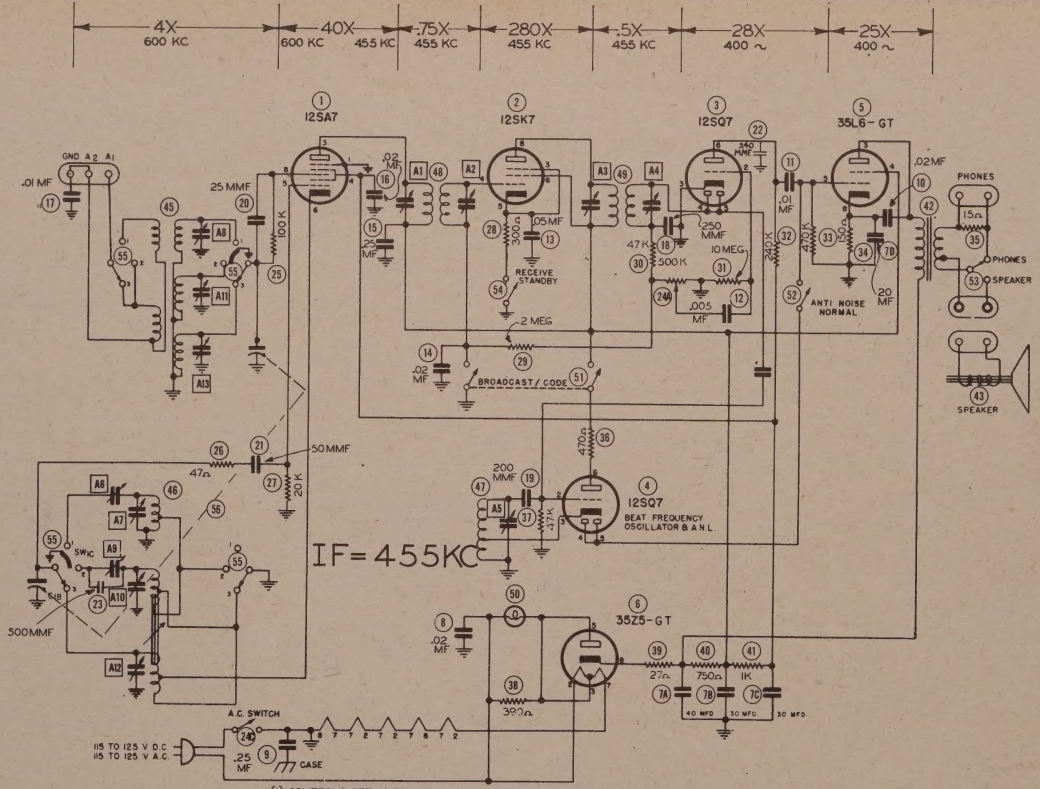
## MISCELLANEOUS

| ITEM No. | PART NAME | HALLICRAFTERS PART No. | NOTES |
|---|---|---|---|
| 51 | BFO Switch | | |
| 52 | Anti-Noise SW. | | |
| 53 | Spkr.-Phones SW. | | |
| 54 | Stand-By SW | | |
| 55 | Band Switch | | |
| 56 | 2-Gang Var. Cap. | 48C161 | |




## CHASSIS—BOTTOM VIEW






(1) CONTROLS SET AS FOLLOWS : BROADCAST, ANTI-NOISE, BAND SWITCH ON NO.1, SPEAKER AND RECEIVE
(2) READINGS ON BFO TUBE TAKEN WITH SWITCH IN CODE POSITION.

VOLTAGE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 12SA7 | 0V. | 24 V. AC | 97 V.DC | 87 V.DC | -3V.DC | 0V. | 11V.AC | -45V.DC |
| 2 | 12SK7 | 0V. | 36 V.AC | 3.2V.DC | 0V. | 3.2 V.DC | 97 V.DC | 24 V.AC | 97 V.DC |
| 3 | 12SQ7GT | 0V. | -5V.DC | 0V. | -5V.DC | -5 V.DC | 64 V.DC | 11V.AC | 0V. |
| 4 | 12SQ7GT | 0V. | 1V.DC | 0V. | 1V.DC | 1 V.DC | 95V.DC | 36V.AC | 46.5VAC |
| 5 | 35L6GT | 0V. | 46.5V.AC | 107 V.DC | 97 V.DC | 0V. | 0V. | 86V.AC | 5.8V.DC |
| 6 | 35Z5GT | 0V. | 117 V.AC | 113V.AC | 0V. | 113V.AC | 113V.DC | 86V.AC | 116V.DC |

RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 12SA7 | 0Ω | 21Ω | 30KΩ | 30KΩ | 21KΩ | .5Ω | 11Ω | 114KΩ |
| 2 | 12SK7 | 0Ω | 31Ω | 300Ω | 2.4MEG. | 300Ω | 30KΩ | 21Ω | 30KΩ |
| 3 | 12SQ7GT | 0Ω | 10 MEG. | 0Ω | 410KΩ | 410KΩ | 270KΩ | 11Ω | 0Ω |
| 4 | 12SQ7GT | 0Ω | 45KΩ | 1.5Ω | 460KΩ | 460KΩ | 30KΩ | 31Ω | 41Ω |
| 5 | 35L6GT | 0Ω | 41Ω | 30KΩ | 30KΩ | 460KΩ | INF. | 72Ω | 120Ω |
| 6 | 35Z5GT | INF. | 97Ω | 94Ω | INF. | 94Ω | 30KΩ | 72Ω | 30KΩ |

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

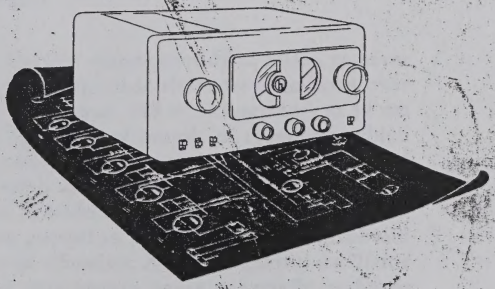
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4610-19

**The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.**

1. **DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.**
2. **Socket connections are shown as bottom views.**
3. **Measured values are from socket pin to common negative.**
4. **Line voltage maintained at 117 volts for voltage readings.**
5. **Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.**
6. **Volume control at maximum, no signal applied for voltage measurements.**

# installation and operating instructions for model S-38 radio receiver



AUGUST, 1946 94-162-A

the hallicrafters co.
MANUFACTURERS OF RADIO AND ELECTRONIC EQUIPMENT, CHICAGO 24, U. S. A.

# INSTALLATION AND OPERATING INSTRUCTIONS FOR RADIO RECEIVER MODEL S-38

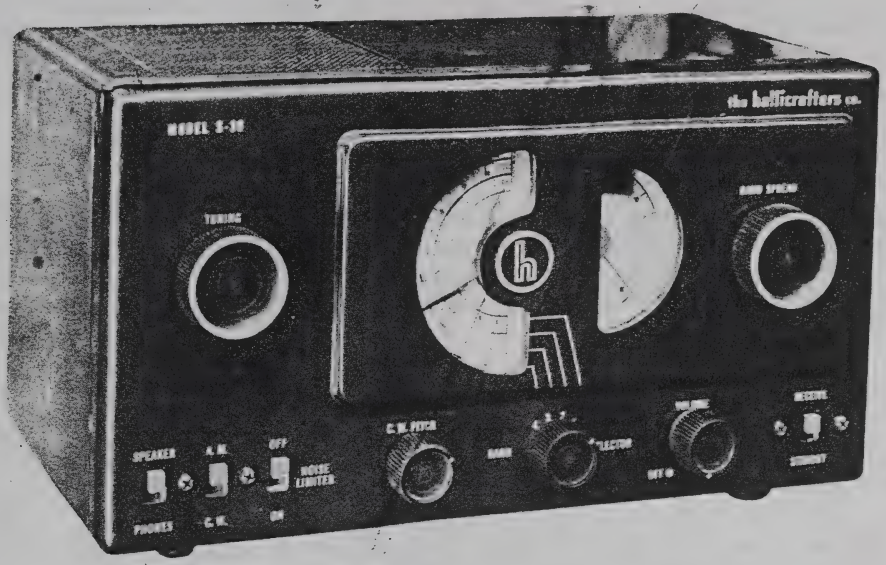



*Figure 1. Radio Receiver Model S-38, front view.*

## DESCRIPTION

GENERAL.—The Model S-38 is a table model, six tube superheterodyne radio receiver capable of receiving standard broadcast and foreign or domestic short wave stations over four frequency ranges with continuous coverage provided from 540 kc (kilocycles) to 32 mc (megacycles). A bandswitch is provided for selecting the four ranges of reception which are indicated on the main tuning dial scale. The amateur bands are also clearly indicated on the main tuning dial scale as reference for the radio amateur. A bandspread dial is provided for fine tuning of short wave stations, the use of which is described later in these instructions. Special features are provided to improve reception such as volume control and noise limiter. Provision is made for the optional use of a headset. A beat frequency oscillator is provided for rendering code signals intelligible, this feature being especially useful to radio amateurs and code enthusiasts.

This receiver is designed to operate from a 117-volt a-c/d-c source and requires 30 watts of power. Connection to the power source is made by the two prong plug which is attached to the six foot line cord extending from the rear of the cabinet.

A special external resistance line cord can be supplied on request for operation on 220 to 250 volts a-c or d-c.

The complete receiver is 12⅞ inches wide by 7⅜ inches high by 8⅝ inches deep and weighs 10 pounds.

FOR THE SHORT WAVE LISTENER.—To tune in short wave broadcast radio stations with the bandspread dial, set the bandspread dial pointer at "0", set the main tuning dial pointer slightly clockwise past the frequency of the station you wish to tune in and then tune in the station with the BANDSPREAD tuning control.

IMPORTANT.—The calibrations on the main tuning dial scale are only correct when BAND SPREAD dial pointer is set at "0".

## OWNER'S MAINTENANCE

PREVENTIVE MAINTENANCE.—Keep the various parts of the receiver clean, especially the tuning capacitors. Dust and dirt should be blown out with dry air or brushed out carefully without bending the capacitors plates in the slightest. Noisy reception may be also caused by dirty condensers wipers, faulty volume controls, switches and tubes, etc., in the receiver. Check switch contacts and controls and make sure that all tubes are always in their sockets.

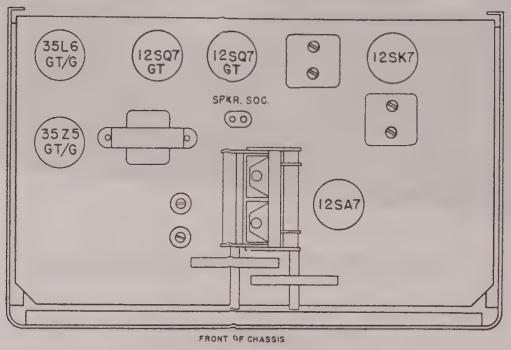



*Figure 6. Radio Receiver Model S-38, view showing tube locations.*

REPLACING THE TUBES AND DIAL LAMP.—It will be necessary to remove the fiber back cover of the receiver in order to replace tubes and dial lamp. This can be accomplished by removing the two rear screws on the bottom plate and then removing the four screws which hold the cover to the cabinet. When replacing tubes, check the tube type carefully and replace with the correct type. Refer to the top view of the receiver chassis, Fig. 6, to determine the location of each tube. The receiver employs one dial lamp with bayonet type socket to illuminate the two dial scales. Replace this lamp with smaller type, 6.8 volt, 150 ma. "brown bead" G.E. #47 or equivalent. The color code referred to is the color of the glass bead above the glass stem inside the envelope of the lamp.

PERIODIC ADJUSTMENTS.—This receiver has been carefully aligned at the factory and should not require realignment until it requires new tubes in the mixer-oscillator stage or shows signs of loss in sensitivity, off frequency calibration or requires service work on this stage. Alignment should not be attempted by inexperienced persons as maximum performance is obtained only by intelligent alignment.

(a) Measure the wire to the length determined in step (b) above cut exactly in half then insert insulator at that point.

(b) Wrap and solder the two wires of the lead-in to each of the quarter-wave sections at the insulator as shown in Figure 4.

Keep in mind that this type of antenna is directional broadside to its length and should be so orientated if maximum pick-up from a given direction is desired. For reference to other types of antennae refer to the latest edition of the A.R.R.L. Radio Amateur Handbook, section on antennas.

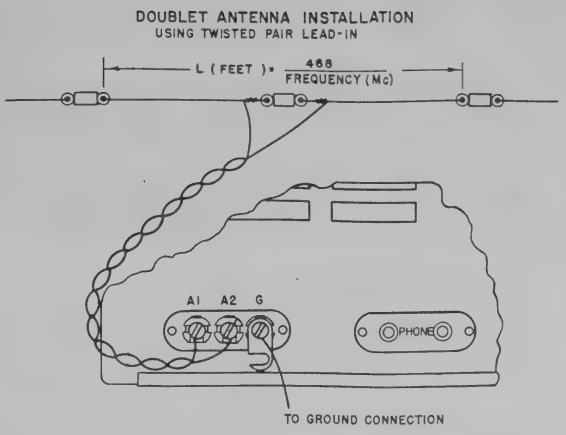



*Figure 4. Doublet Antenna Installation.*

HEADSET RECEPTION.—Phone tip jacks located at the rear of the receiver chassis are provided for headset reception. A high impedance headset is recommended for use with this receiver. When headset reception is desired, insert the cord tips into the PHONES jacks and set the SPEAKER-PHONES switch at PHONES.

EXPLANATION OF THE RECEIVER CONTROLS.—Scanning across the front of the receiver from left to right the controls and an explanation of each is as follows:

NOTE. Some of the control markings are in RED. This is an added feature incorporated for the convenience of the listener who is not familiar with radio terminology as an aid in setting the controls most used for the reception of standard broadcast stations.

Reference to Figure 5 will help in becoming familiar with the use of the controls.

IF HUM IS PRESENT when operating the receiver from an a-c source of power, reverse the line cord plug in the power outlet. If this does not remove the hum, then it is recommended that a good ground be connected to the ground terminal at rear of receiver.

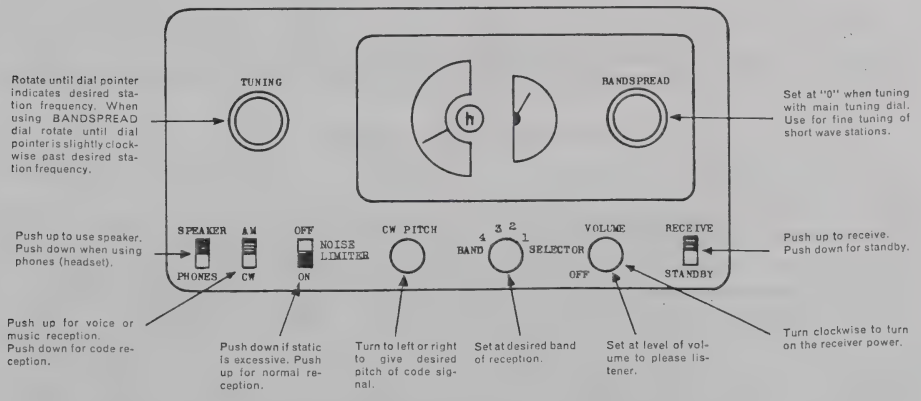



*Figure 5. Radio Receiver Model S-38, view showing use of controls.*

1. TUNING.—This control tunes the receiver to the frequency of the desired station which is read directly on the main tuning dial scale, located to the right of the control, and is indicated by the RED pointer when the bandspread pointer is set at "0".

2. SPEAKER-PHONES switch.—This switch connects the output of the receiver to the speaker or a headset depending on which one is used.

3. AM/CW switch.—This switch is used to connect the beat frequency oscillator into the detector circuit for the reception of code signals and to connect the automatic volume control circuits for the reception of broadcast and phone stations.

4. NOISE LIMITER switch.—This switch connects a circuit which clips the noise voltage peaks generated by electrical disturbances, thereby providing intelligible reception in cases where reception would normally be impossible. This feature will not totally remove the noise but will do a good job of limiting it to reasonable levels.

5. CW PITCH control.—This control varies the inductance of the beat frequency oscillator coil thereby providing a means of varying the pitch of the code signals from 0 to 1,000 cycles depending on the listener's discretion.

6. BAND SELECTOR switch.—This switch selects one of the four bands or frequency ranges available to the listener. The frequencies covered by each band switch position are read directly from the main tuning dial scale.

7. VOLUME control.—This control regulates the audio signal level at the speaker or headset and should be set to a position which will provide a level of volume most pleasing to the listener. Ganged to this control is the receiver power switch which connects the power to the receiver when the control is turned clockwise.

8. RECEIVER-STANDBY switch.—This switch disconnects the d-c voltage from the receiver while leaving the tube heaters at operating temperature, thus leaving the receiver in condition for instant use. This switch is used by the radio amateur "ham" to put the receiver in a standby condition when transmitting. For the general listener it provides a means of putting the receiver in an operative condition ready for instant use.

9. BAND SPREAD control.—This control is used independent of the main tuning control to provide for fine tuning of short wave stations. See Figure 5 for illustration on use of the controls. Also following paragraph on band spreading.

## BANDSPREAD TUNING

FOR THE AMATEUR.—To use the bandspread dial, set the dial pointer at "0", set the main tuning dial pointer at the high frequency end of the range to be covered and tune in the stations with the BANDSPREAD control. Example:—Assume you wish to listen in on the 20 meter band. Set the BAND SELECTOR switch as position #3, the main tuning dial pointer at 14.4 mc (megacycles), the high frequency end of that band, and then set the band spread dial pointer at "0". You can now listen on the 20 meter band by tuning with the BANDSPREAD tuning control. The above example holds true for any of the frequency ranges, altho the higher in frequency is the range of tuning on the main tuning dial scale, the narrower will be the range of tuning on the bandspread tuning dial scale. Bandspread tuning is not necessary on the broadcast band (Position #1 of the BAND SELECTOR switch).

The maximum audio output of the receiver at the speaker is 0.8 watt with less than 10 per cent distortion.

MECHANICAL DESCRIPTION.—The Model S-38 radio receiver is housed in a well ventilated sheet metal cabinet to minimize electrical interference and provide mechanical strength. Access to the top of the chassis may be had without removing the chassis from the cabinet. Mixer and oscillator trimmer adjustments may be made from the bottom of the cabinet through the holes provided for this purpose under the notice card. Two holes on the bottom near the front of the cabinet are provided for oscillator padder adjustments. All controls for tuning and operating the receiver are located on the front of the receiver.

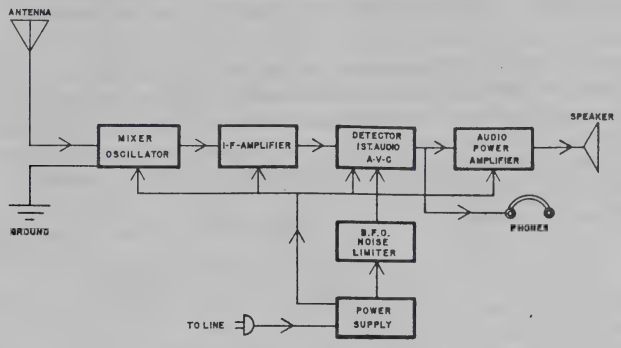



***Figure 2. Radio Receiver Model S-38, block diagram showing receiver circuits.***

ELECTRICAL DESCRIPTION.—The block diagram (Fig. 2) illustrates the function of the receiver circuits in a simple manner which is described as follows: Radio signals are picked up at the antenna and fed to the antenna coil of the mixer stage where the desired station signal is selected by a resonant circuit and fed to the mixer tube. At the same time, the oscillator section of the tube generates a local r-f signal which is mixed with the incoming station signal. An intermediate frequency signal of 455 kc (kilocycles) is selected by the first i-f transformer and fed to the i-f amplifier tube where it is amplified and then fed through the second i-f transformer to the detector-first audio amplifier tube where it is demodulated. The audio component of the signal is then amplified by the triode section of the tube and capacity coupled to the audio power output tube where it is further amplified and fed to the speaker.

The a-v-c circuit is a conventional one and provides stability when listening to music or voice (phone) broadcasts. It is in use when the AM/CW switch is in the AM position.

The beat frequency oscillator stage operates in the CW position of the AM/CW switch and provides an r-f signal at 455 kc (kilocycles) which is fed to the detector stage to beat against the i-f signal, thereby rendering code signals intelligible. The pitch of the code signal can of course be varied by means of the CW PITCH control which will permit a variation from 0 to 1,000 cycles.

A rectifier stage provides a well filtered source of high voltage to the plate and screen circuits when the receiver is operated from an a-c source.

## INSTALLATION AND OPERATION

INSTALLING THE RECEIVER.—

1. As soon as the receiver has been unpacked, examine it for any apparent damage which might have occurred in shipment. If any damages are found, file a claim IMMEDIATELY with the transportation company. If purchased "over the counter", examine thoroughly for any possible visible defects, BEFORE ACCEPTANCE.

2. This receiver is equipped with rubber mounting feet for mounting on a table or other piece of furniture. Do not mount this radio on a radiator, gas stove or other area subject to excessive heat or humidity. Metal surfaced areas are not recommended.

3. An external antenna should be connected to the receiver as follows: On the rear apron of the receiver chassis is located the antenna connector strip, marked A1, A2, and G. Select one of the antenna systems described below and connect it to this strip as directed. An external ground connection is not essential to this receiver, but in some locations will give better reception. If it is desired to use an external ground, always connect it to the terminal on the strip marked "G"; NEVER connect it directly to the receiver chassis.

A. Single Wire Antenna.—When using a single wire antenna installation, connect a jumper between the antenna terminals A2 and G. Then connect a single wire antenna of about 50 to 75 feet (including lead-in) to terminal A1. Use #14 (AWG) or heavier wire for best results. Erect the antenna as high and free from surrounding objects as possible. This type of antenna works well where the signal to noise ratio is relatively high and a more elaborate installation is not practical.

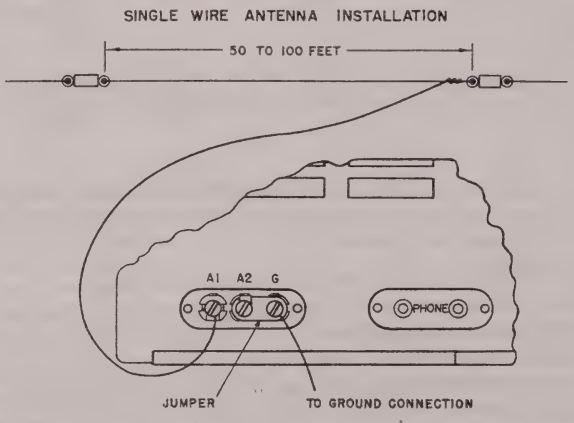



*Figure 3. Single Wire Antenna Installation.*

B. Doublet Antenna.—The doublet antenna is recommended where the receiving conditions are poor or where maximum sensitivity is required over a relatively narrow range of frequencies. The lead-in wires from the antenna are then connected to terminals A1 and A2. If a concentric line with grounded outer conductor is used, connect the inner conductor to terminal A1, the outer conductor to A2 and connect a jumper between terminals A2 and G.

(1). To determine the proper length of the doublet antenna in feet:

(a) Determine the frequency range to which you wish to listen.

(b) Divide 468 by the frequency (in megacycles) of the high frequency end of the range you selected.

(2) To prepare the antenna for installation:

FOR THE SHORT WAVE LISTENER.—To tune in short wave broadcast radio stations with the bandspread dial, set the bandspread dial pointer at "0", set the main tuning dial pointer slightly clockwise past the frequency of the station you wish to tune in and then tune in the station with the BANDSPREAD tuning control.

IMPORTANT.—The calibrations on the main tuning dial scale are only correct when BAND SPREAD dial pointer is set at "0".

## OWNER'S MAINTENANCE

PREVENTIVE MAINTENANCE.—Keep the various parts of the receiver clean, especially the tuning capacitors. Dust and dirt should be blown out with dry air or brushed out carefully without bending the capacitors plates in the slightest. Noisy reception may be also caused by dirty condensers wipers, faulty volume controls, switches and tubes, etc., in the receiver. Check switch contacts and controls and make sure that all tubes are always in their sockets.

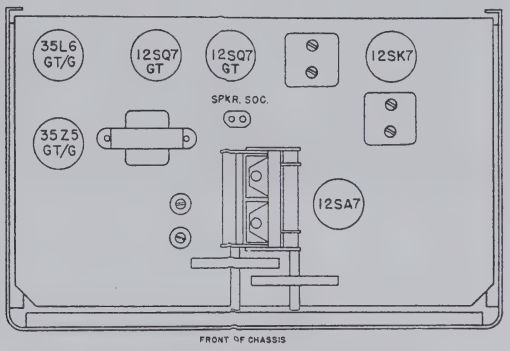
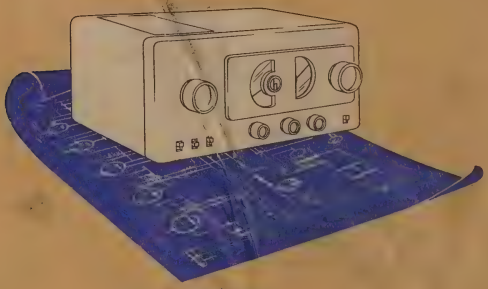



*Figure 6. Radio Receiver Model S-38, view showing tube locations.*

REPLACING THE TUBES AND DIAL LAMP.—It will be necessary to remove the fiber back cover of the receiver in order to replace tubes and dial lamp. This can be accomplished by removing the two rear screws on the bottom plate and then removing the four screws which hold the cover to the cabinet. When replacing tubes, check the tube type carefully and replace with the correct type. Refer to the top view of the receiver chassis, Fig. 6, to determine the location of each tube. The receiver employs one dial lamp with bayonet type socket to illuminate the two dial scales. Replace this lamp with smaller type, 6.8 volt, 150 ma. "brown bead" G.E. #47 or equivalent. The color code referred to is the color of the glass bead above the glass stem inside the envelope of the lamp.

PERIODIC ADJUSTMENTS.—This receiver has been carefully aligned at the factory and should not require realignment until it requires new tubes in the mixer-oscillator stage or shows signs of loss in sensitivity, off frequency calibration or requires service work on this stage. Alignment should not be attempted by inexperienced persons as maximum performance is obtained only by intelligent alignment.

# installation and operating instructions for model S-38 radio receiver



AUGUST, 1946 94-162-A

the hallicrafters co.
MANUFACTURERS OF RADIO AND ELECTRONIC EQUIPMENT, CHICAGO 24, U. S. A.

# INSTALLATION AND OPERATING INSTRUCTIONS FOR RADIO RECEIVER MODEL S-38

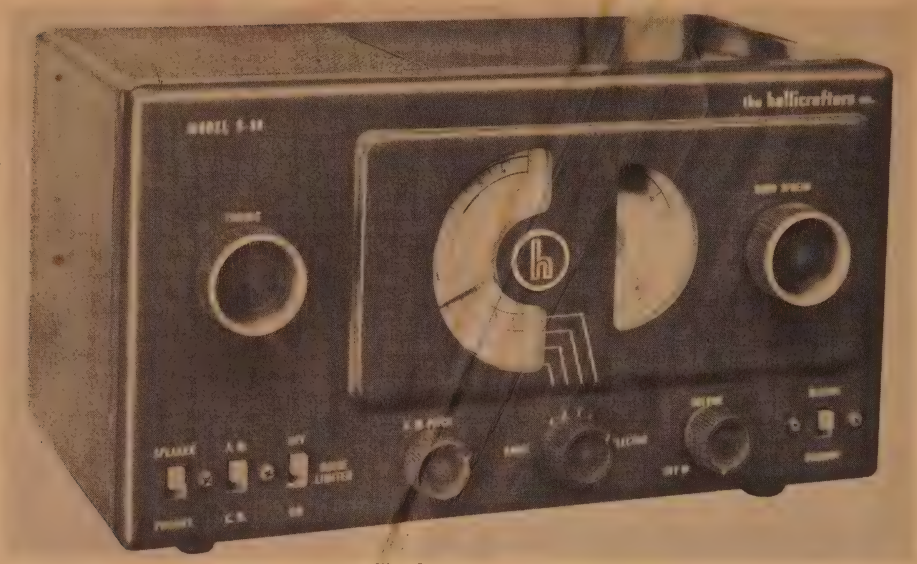


*Figure 1. Radio Receiver Model S-38, front view.*

## DESCRIPTION

GENERAL.—The Model S-38 is a table model, six tube superheterodyne radio receiver capable of receiving standard broadcast and foreign or domestic short wave stations over four frequency ranges with continuous coverage provided from 540 kc (kilocycles) to 32 mc (megacycles). A bandswitch is provided for selecting the four ranges of reception which are indicated on the main tuning dial scale. The amateur bands are also clearly indicated on the main tuning dial scale as reference for the radio amateur. A bandspread dial is provided for fine tuning of short wave stations, the use of which is described later in these instructions. Special features are provided to improve reception such as volume control and noise limiter. Provision is made for the optional use of a headset. A beat frequency oscillator is provided for rendering code signals intelligible, this feature being especially useful to radio amateurs and code enthusiasts.

This receiver is designed to operate from a 117-volt a-c/d-c source and requires 30 watts of power. Connection to the power source is made by the two prong plug which is attached to the six foot line cord extending from the rear of the cabinet.

A special external resistance line cord can be supplied on request for operation on 220 to 250 volts a-c or d-c.

The complete receiver is 12⅞ inches wide by 7⅜ inches high by 8⅝ inches deep and weighs 10 pounds.

The maximum audio output of the receiver at the speaker is 0.8 watt with less than 10 per cent distortion.

MECHANICAL DESCRIPTION.—The Model S-38 radio receiver is housed in a well ventilated sheet metal cabinet to minimize electrical interference and provide mechanical strength. Access to the top of the chassis may be had without removing the chassis from the cabinet. Mixer and oscillator trimmer adjustments may be made from the bottom of the cabinet through the holes provided for this purpose under the notice card. Two holes on the bottom near the front of the cabinet are provided for oscillator padder adjustments. All controls for tuning and operating the receiver are located on the front of the receiver.

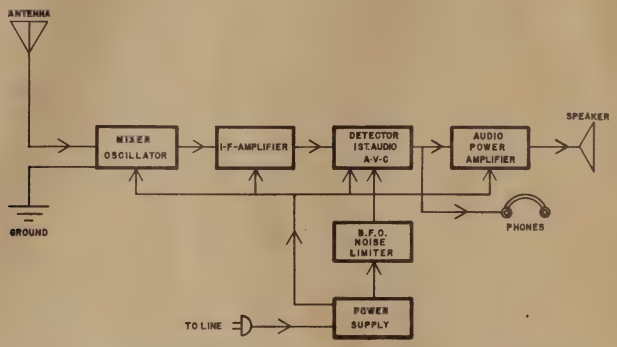



*Figure 2. Radio Receiver Model S-38, block diagram showing receiver circuits.*

ELECTRICAL DESCRIPTION.—The block diagram (Fig. 2) illustrates the function of the receiver circuits in a simple manner which is described as follows: Radio signals are picked up at the antenna and fed to the antenna coil of the mixer stage where the desired station signal is selected by a resonant circuit and fed to the mixer tube. At the same time, the oscillator section of the tube generates a local r-f signal which is mixed with the incoming station signal. An intermediate frequency signal of 455 kc (kilocycles) is selected by the first i-f transformer and fed to the i-f amplifier tube where it is amplified and then fed through the second i-f transformer to the detector-first audio amplifier tube where it is demodulated. The audio component of the signal is then amplified by the triode section of the tube and capacity coupled to the audio power output tube where it is further amplified and fed to the speaker.

The a-v-c circuit is a conventional one and provides stability when listening to music or voice (phone) broadcasts. It is in use when the AM/CW switch is in the AM position.

The beat frequency oscillator stage operates in the CW position of the AM/CW switch and provides an r-f signal at 455 kc (kilocycles) which is fed to the detector stage to beat against the i-f signal, thereby rendering code signals intelligible. The pitch of the code signal can of course be varied by means of the CW PITCH control which will permit a variation from 0 to 1,000 cycles.

A rectifier stage provides a well filtered source of high voltage to the plate and screen circuits when the receiver is operated from an a-c source.

## INSTALLATION AND OPERATION

INSTALLING THE RECEIVER.—

1. As soon as the receiver has been unpacked, examine it for any apparent damage which might have occurred in shipment. If any damages are found, file a claim IMMEDIATELY with the transportation company. If purchased "over the counter", examine thoroughly for any possible visible defects, BEFORE ACCEPTANCE.

2. This receiver is equipped with rubber mounting feet for mounting on a table or other piece of furniture. Do not mount this radio on a radiator, gas stove or other area subject to excessive heat or humidity. Metal surfaced areas are not recommended.

3. An external antenna should be connected to the receiver as follows: On the rear apron of the receiver chassis is located the antenna connector strip, marked A1, A2, and G. Select one of the antenna systems described below and connect it to this strip as directed. An external ground connection is not essential to this receiver, but in some locations will give better reception. If it is desired to use an external ground, always connect it to the terminal on the strip marked "G"; NEVER connect it directly to the receiver chassis.

A. Single Wire Antenna.—When using a single wire antenna installation, connect a jumper between the antenna terminals A2 and G. Then connect a single wire antenna of about 50 to 75 feet (including lead-in) to terminal A1. Use #14 (AWG) or heavier wire for best results. Erect the antenna as high and free from surrounding objects as possible. This type of antenna works well where the signal to noise ratio is relatively high and a more elaborate installation is not practical.

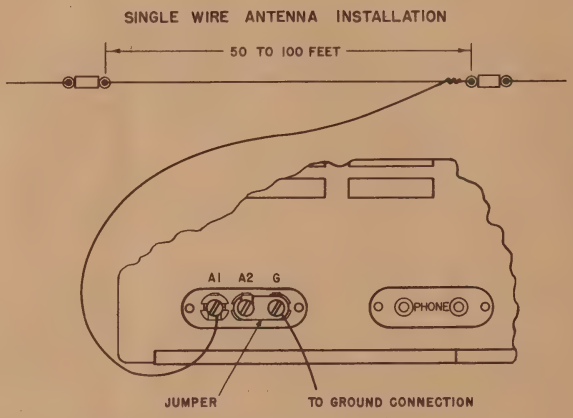



*Figure 3. Single Wire Antenna Installation.*

B. Doublet Antenna.—The doublet antenna is recommended where the receiving conditions are poor or where maximum sensitivity is required over a relatively narrow range of frequencies. The lead-in wires from the antenna are then connected to terminals A1 and A2. If a concentric line with grounded outer conductor is used, connect the inner conductor to terminal A1, the outer conductor to A2 and connect a jumper between terminals A2 and G.

(1). To determine the proper length of the doublet antenna in feet:

(a) Determine the frequency range to which you wish to listen.

(b) Divide 468 by the frequency (in megacycles) of the high frequency end of the range you selected.

(2) To prepare the antenna for installation:

(a) Measure the wire to the length determined in step (b) above cut exactly in half then insert insulator at that point.

(b) Wrap and solder the two wires of the lead-in to each of the quarter-wave sections at the insulator as shown in Figure 4.

Keep in mind that this type of antenna is directional broadside to its length and should be so orientated if maximum pick-up from a given direction is desired. For reference to other types of antennae refer to the latest edition of the A.R.R.L. Radio Amateur Handbook, section on antennas.

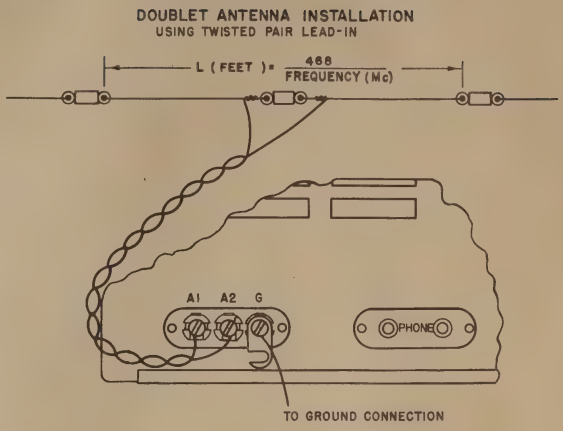



*Figure 4. Doublet Antenna Installation.*

HEADSET RECEPTION.—Phone tip jacks located at the rear of the receiver chassis are provided for headset reception. A high impedance headset is recommended for use with this receiver. When headset reception is desired, insert the cord tips into the PHONES jacks and set the SPEAKER-PHONES switch at PHONES.

EXPLANATION OF THE RECEIVER CONTROLS.—Scanning across the front of the receiver from left to right the controls and an explanation of each is as follows:

NOTE. Some of the control markings are in RED. This is an added feature incorporated for the convenience of the listener who is not familiar with radio terminology as an aid in setting the controls most used for the reception of standard broadcast stations.

Reference to Figure 5 will help in becoming familiar with the use of the controls.

IF HUM IS PRESENT when operating the receiver from an a-c source of power, reverse the line cord plug in the power outlet. If this does not remove the hum, then it is recommended that a good ground be connected to the ground terminal at rear of receiver.

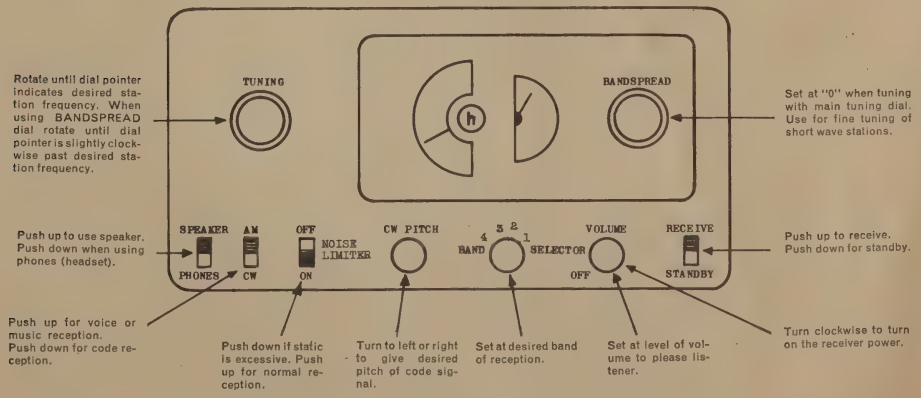



*Figure 5. Radio Receiver Model S-38, view showing use of controls.*

1. TUNING.—This control tunes the receiver to the frequency of the desired station which is read directly on the main tuning dial scale, located to the right of the control, and is indicated by the RED pointer when the bandspread pointer is set at "0".

2. SPEAKER-PHONES switch.—This switch connects the output of the receiver to the speaker or a headset depending on which one is used.

3. AM/CW switch.—This switch is used to connect the beat frequency oscillator into the detector circuit for the reception of code signals and to connect the automatic volume control circuits for the reception of broadcast and phone stations.

4. NOISE LIMITER switch.—This switch connects a circuit which clips the noise voltage peaks generated by electrical disturbances, thereby providing intelligible reception in cases where reception would normally be impossible. This feature will not totally remove the noise but will do a good job of limiting it to reasonable levels.

5. CW PITCH control.—This control varies the inductance of the beat frequency oscillator coil thereby providing a means of varying the pitch of the code signals from 0 to 1,000 cycles depending on the listener's discretion.

6. BAND SELECTOR switch.—This switch selects one of the four bands or frequency ranges available to the listener. The frequencies covered by each band switch position are read directly from the main tuning dial scale.

7. VOLUME control.—This control regulates the audio signal level at the speaker or headset and should be set to a position which will provide a level of volume most pleasing to the listener. Ganged to this control is the receiver power switch which connects the power to the receiver when the control is turned clockwise.

8. RECEIVER-STANDBY switch.—This switch disconnects the d-c voltage from the receiver while leaving the tube heaters at operating temperature, thus leaving the receiver in condition for instant use. This switch is used by the radio amateur "ham" to put the receiver in a standby condition when transmitting. For the general listener it provides a means of putting the receiver in an operative condition ready for instant use.

9. BAND SPREAD control.—This control is used independent of the main tuning control to provide for fine tuning of short wave stations. See Figure 5 for illustration on use of the controls. Also following paragraph on band spreading.

## BANDSPREAD TUNING

FOR THE AMATEUR.—To use the bandspread dial, set the dial pointer at "0", set the main tuning dial pointer at the high frequency end of the range to be covered and tune in the stations with the BANDSPREAD control. Example:—Assume you wish to listen in on the 20 meter band. Set the BAND SELECTOR switch as position #3, the main tuning dial pointer at 14.4 mc (megacycles), the high frequency end of that band, and then set the band spread dial pointer at "0". You can now listen on the 20 meter band by tuning with the BANDSPREAD tuning control. The above example holds true for any of the frequency ranges, altho the higher in frequency is the range of tuning on the main tuning dial scale, the narrower will be the range of tuning on the bandspread tuning dial scale. Bandspread tuning is not necessary on the broadcast band (Position #1 of the BAND SELECTOR switch).

**FOR THE SHORT WAVE LISTENER.**—To tune in short wave broadcast radio stations with the bandspread dial, set the bandspread dial pointer at "0", set the main tuning dial pointer slightly clockwise past the frequency of the station you wish to tune in and then tune in the station with the BANDSPREAD tuning control.

IMPORTANT.—The calibrations on the main tuning dial scale are only correct when BAND SPREAD dial pointer is set at "0".

## OWNER'S MAINTENANCE

PREVENTIVE MAINTENANCE.—Keep the various parts of the receiver clean, especially the tuning capacitors. Dust and dirt should be blown out with dry air or brushed out carefully without bending the capacitors plates in the slightest. Noisy reception may be also caused by dirty condensers wipers, faulty volume controls, switches and tubes, etc., in the receiver. Check switch contacts and controls and make sure that all tubes are always in their sockets.

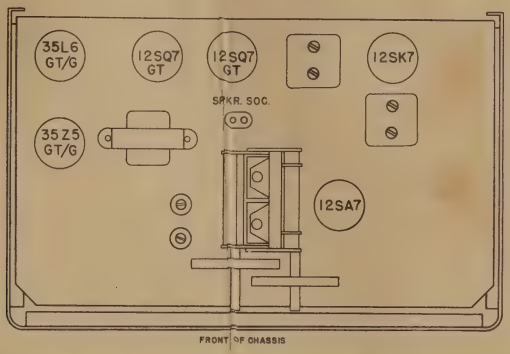



*Figure 6. Radio Receiver Model S-38, view showing tube locations.*

REPLACING THE TUBES AND DIAL LAMP.—It will be necessary to remove the fiber back cover of the receiver in order to replace tubes and dial lamp. This can be accomplished by removing the two rear screws on the bottom plate and then removing the four screws which hold the cover to the cabinet. When replacing tubes, check the tube type carefully and replace with the correct type. Refer to the top view of the receiver chassis, Fig. 6, to determine the location of each tube. The receiver employs one dial lamp with bayonet type socket to illuminate the two dial scales. Replace this lamp with smaller type, 6.8 volt, 150 ma. "brown bead" G.E. #47 or equivalent. The color code referred to is the color of the glass bead above the glass stem inside the envelope of the lamp.

PERIODIC ADJUSTMENTS.—This receiver has been carefully aligned at the factory and should not require realignment until it requires new tubes in the mixer-oscillator stage or shows signs of loss in sensitivity, off frequency calibration or requires service work on this stage. Alignment should not be attempted by inexperienced persons as maximum performance is obtained only by intelligent alignment.

# Warranty

*The Hallicrafters Company warrants each new radio product manufactured by it to be free from defective material and workmanship and agrees to remedy any such defect or to furnish a new part in exchange for any part of any unit of its manufacture which under normal installation, use and service discloses such defect, provided the unit is delivered by the owner to our authorized radio dealer or wholesaler from whom purchased, intact, for our examination with all transportation charges prepaid within ninety days from the date of sale to original purchaser and provided that such examination discloses in our judgment that it is thus defective.*

*This warranty does not extend to any of our radio products which have been subjected to misuse, neglect, accident, incorrect wiring not our own, improper installation, or to use in violation of instructions furnished by us, nor extend to units which have been repaired or altered outside of our authorized facilities, nor to cases where the serial number thereof has been removed, defaced or changed, nor to accessories used therewith not of our own manufacture.*

*Any part of a unit approved for remedy or exchange hereunder will be remedied or exchanged by the authorized radio dealer or wholesaler without charge to the owner.*

*This warranty is in lieu of other warranties expressed or implied and no representative or person is authorized to assume for us any other liability in connection with the sale of our radio products.*

# the hallicrafters co.

## SERVICE BULLETIN No. 2 FOR MODEL S-38

GENERAL: Model S-38 is a 6 tube AC/DC superheterodyne table model, radio receiver, incorporating 4 bands of AM/CW reception, as follows: band #1, 540 kc to 1650 kc; band #2, 1650 kc to 5.0 mc; band #3, 5.0 mc to 14.5 mc; band #4, 13.5 mc to 32.0 mc. Provision for AVC, noise limiting, BFO pitch, headset reception, standby operation, and bandspreading are provided.

REAR PANEL CONNECTIONS: Consist of line cord with plug, antenna and ground connector strip, and headset connector plug strip.

POWER SUPPLY DATA: 105 to 125 volts AC/DC line voltage. Power drain is 30 watts.

TUBE TYPES AND FUNCTION: 12SA7—mixer-oscillator; 12SK7—IF amplifier; 12SQ7GT—detector, AVC, audio amplifier; 35L6GT—audio power amplifier; 12SQ7GT—BFO and ANL; 35Z5GT—power rectifier for AC operation.

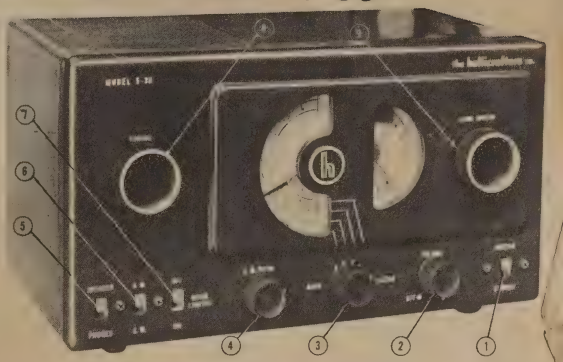



*Fig. 1. Front view of receiver showing control locations.*

### DETAILED SERVICE INFORMATION

| IF FREQUENCY | IF SELECTIVITY | IMAGE RATIO | SENSITIVITY | AUDIO OUTPUT |
|---|---|---|---|---|
| 455 kc | 7 kc wide at 6 db down<br>65 kc wide at 60 db down<br>(for 50 milliwatt output) | 2.7:1 at 30 mc<br>6:1 at 14 mc<br>10:1 at 5 mc<br>35:1 at 1500 kc | 12 microvolt at 600 kc<br>12 microvolt at 5 mc<br>11 microvolt at 14 mc<br>23 microvolt at 30 mc<br>(for 50 milliwatt output) | 675 milliwatt with less than 10% distortion at 400 cycles |

### CONTROL SETTINGS FOR PRELIMINARY TEST OPERATION (Broadcast Band)

| REF. NO. (in Fig. 1) | NAME | FUNCTION | SETTING | REF. NO. (in Fig. 1) | NAME | FUNCTION | SETTING |
|---|---|---|---|---|---|---|---|
| 1 | STANDBY/ RECEIVE | Receiver temporary standby | At "RECEIVE" | 5 | SPEAKER/ PHONES | Output selector switch | At "SPEAKER" |
| 2 | VOLUME | Audio gain control and receiver on/off switch | Half clockwise; adj. as necessary | 6 | CW/AM | BFO on/off switch AVC on/off switch | At "AM" (AVC on) |
| | | | | 7 | NOISE LIMITER | Noise peak limiting | At "OFF" |
| 3 | BAND SELECTOR | Operating band selector | Clockwise to "1" | 8 | TUNING | Main tuning control | To local station freq. on main dial scale |
| 4 | PITCH CONTROL | CW beat note pitch selector | Any position (not in use) | 9 | BAND SPREAD | Short wave band spreading | To "0" on small dial scale |

### HOW TO RESTRING DIAL CORDS

To restring the main tuning dial cord, cut a 14" length of 30 lb. test dial cord and tie one end to the tension spring of the main tuning capacitor drive pulley at position "1" on the diagram. Following the numbers 1 through 15, wind the cord on the pulley and knob drive shaft. At position "15," stretch the tension spring and tie the cord securely. Cut off the excess cord. Note that two complete turns are wound on the knob drive shaft.

To restring the bandspread tuning dial cord, cut a 16" length of dial cord and follow the procedure as explained above, except start at position "A" on the diagram and proceed through position "S." Note that the knob drive shaft has two complete turns.

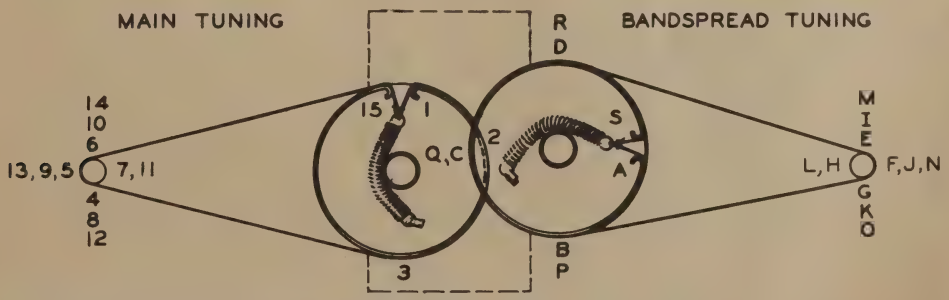



*Fig. 2. Dial cable stringing procedure.*

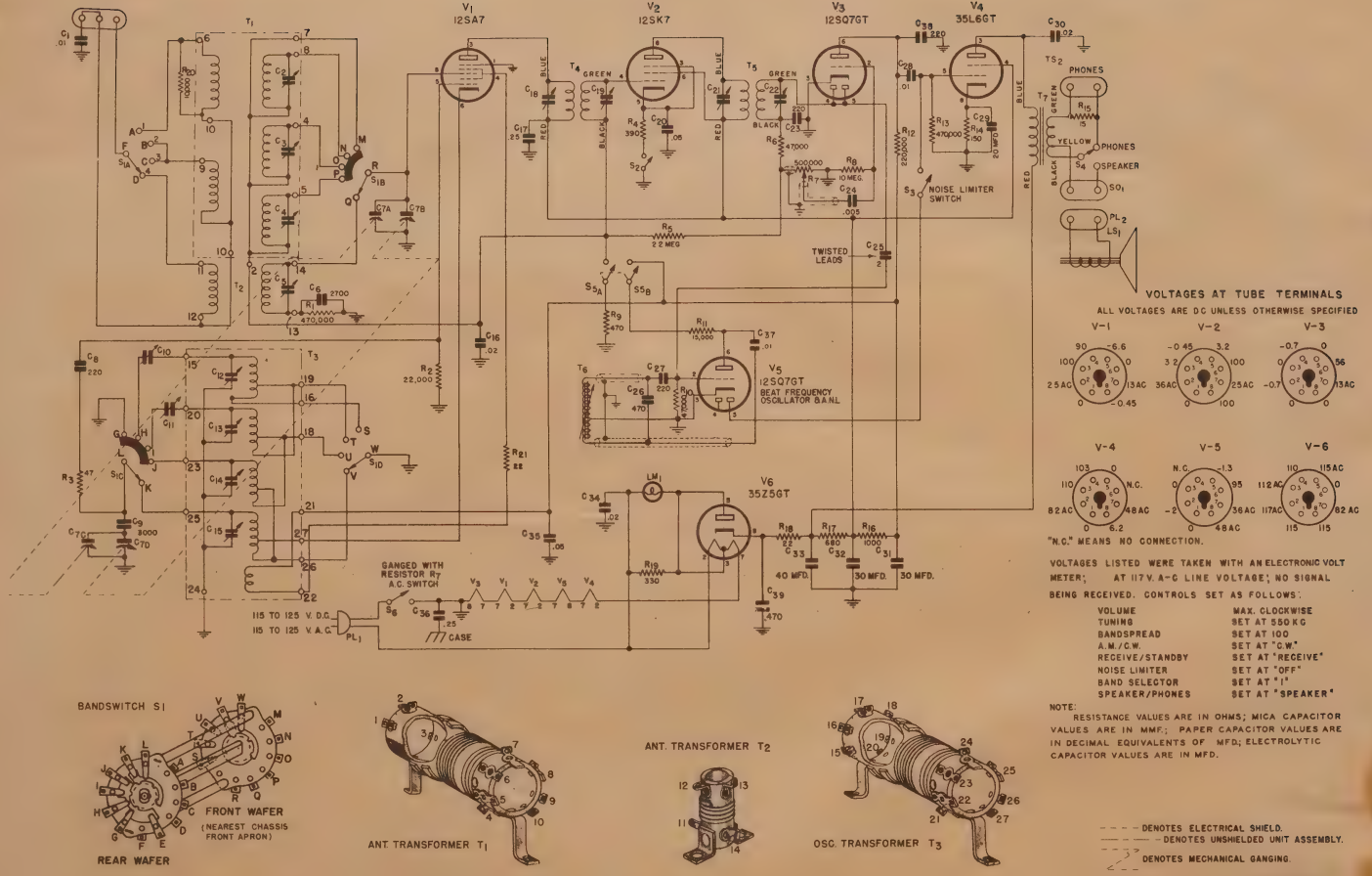



*Fig. 3 Schematic diagram including tube terminal voltages and pictorial views of bandswitch, mixer and oscillator coil forms for terminal lug location and cross reference to the schematic.*

# REPLACEMENT PARTS

| REF. NO. | DESCRIPTION | HALLICRAFTER'S PART NUMBER | LIST PRICE PER COMPONENT |
|---|---|---|---|
| | **CAPACITORS** | | |
| C-1 | 0.01 mfd; 600 vdcw; paper | 46AY103J | $ .10 |
| C-2, 3 & 4 | Trimmer Unit for antenna transformer T-1 | 44B129 | .40 |
| C-5 | Trimmer for antenna transformer T-2 | 44A039 | .10 |
| C-6 | 2700 mmf; ±5%; 500 vdcw; mica | CM30A272J | .30 |
| C-7 | Tuning capacitor; air; 2 sections ganged | 48C162 | 2.90 |
| C-8, 23, 27 & 38 | 220 mmf; 500 vdcw; mica | CM20A221K | .15 |
| C-9 | 3000 mmf; 5%; 500 vdcw; mica | CM30A302J | |
| C-10 & 11 | Dual padder for oscillator transformer T-3 | 44A152 | .65 |
| C-12, 13, 14 & 15 | Trimmer Unit for oscillator transformer T-3 | 44B159 | .50 |
| C-16 & 34 | 0.02 mfd; 400 vdcw; paper | 46AW203J | .10 |
| C-17 & 36 | 0.25 mfd; 200 vdcw; paper | 46AT254J | .15 |
| C-18, 19, 21 & 22 | Trimmers for IF transformers T-4 and T-5 | 44A097 | .25 |
| C-20 & 35 | 0.05 mfd; 200 vdcw; paper | 46AU503J | .10 |
| C-24 | 0.005 mfd; 400 vdcw; paper | 46AW502J | .10 |
| C-25 | 2 mmf; twisted insulated wire leads; NOT AVAILABLE AS A SPARE PART. | | |
| C-26 & 39 | 470 mmf; 500 vdcw; mica | CM20A471K | .20 |
| C-28 & 37 | 0.01 mfd; 400 vdcw; paper | 46AW103J | .10 |
| C-29, 31, 32 & 33 | Electrolytic; four section unit; color coded leads; sect. 1(C-29) 20 mfd, 25 vdcw; sect. 2 & 3(C-31 & 32) 30 mfd, 150 vdcw; sect. 4(C-33) 40 mfd, 150 vdcw | 45B091 | .80 |
| C-30 | 0.02 mfd; 600 vdcw; paper | 46AY203J | .10 |
| | **PILOT LAMP** | | |
| LM-1 | 6/8 v @ 150ma; brown bead; G. E. type 47 | 39A004 | .10 |
| | **LOUDSPEAKER** | | |
| LS-1 | 5" P.M. speaker; 3.2 ohm voice coil | 85C035 | 2.50 |
| | **PLUGS** | | |
| PL-1 | AC line cord with two prong plug at one end | 87A078 | .35 |
| PL-2 | Speaker voice coil connector plug | 88A072 | .10 |
| | **RESISTORS** | | |
| R-1 & 13 | 470,000 ohm; ½ watt; carbon | RC20AE474M | .10 |
| R-2 | 22,000 ohm; ½ watt; carbon | RC20AE223M | .10 |
| R-3 | 47 ohm; ½ watt; carbon | RC20AE470M | .10 |
| R-4 | 390 ohm; ±10%; ½ watt; carbon | RC20AE391K | .10 |
| R-5 | 2.2 megohm; ½ watt; carbon | RC20AE225M | .10 |
| R-6 & 10 | 47,000 ohm; ½ watt; carbon | RC20AE473M | .10 |
| R-7 & S-6 | Volume Control; ½ megohm; includes SPST toggle action switch assembly on rear | 25B094 | .50 |
| R-8 | 10 megohm; ½ watt; carbon | RC20AE106M | .10 |
| R-9 & 11 | 470 ohm; ±10%; ½ watt; carbon | RC20AE471K | .10 |
| R-12 | 220,000 ohm; ½ watt; carbon | RC20AE224M | .10 |
| R-14 | 150 ohm; ±10%; ½ watt; carbon | RC20AE151K | .10 |
| R-15 | 15 ohm; ½ watt; carbon | RC20AE150M | .10 |
| R-16 | 1,000 ohm; ½ watt; carbon | RC20AE102M | .10 |
| R-17 | 680 ohm; 1 watt; carbon | RC30AE681M | .10 |
| R-18 & 21 | 22 ohm; ½ watt; carbon | RC20AE220M | .10 |
| R-19 | 330 ohm; ½ watt; carbon | RC20AE331M | .10 |
| R-20 | 10,000 ohm; ½ watt; carbon | RC20AE103M | .10 |

NOTE: Mica dielectric capacitors have a tolerance of ±10% unless otherwise specified; paper dielectric capacitors tolerance is −10 +40%; carbon resistors have a tolerance of ±20% unless otherwise specified.

| REF. NO. | DESCRIPTION | HALLICRAFTER'S PART NUMBER | LIST PRICE PER COMPONENT |
|---|---|---|---|
| | **SWITCHES** | | |
| S-1a, b, c & d | Bandswitch; two sections ganged; rotary four position | 60A240 | $ .95 |
| S-2 & 3 | "RECEIVE-STANDBY" and "NOISE LIMITER" switches; slide action; SPST | 60A244 | .20 |
| S-4 | "SPEAKER-PHONES" switch; slide action; SPDT | 60A243 | .20 |
| S-5 | "A.M.-C.W." switch; slide action; DPST. | 60A245 | .25 |
| | **TRANSFORMERS** | | |
| T-1 | Antenna coil for bands 1, 2 and 3 | 51C821 | 2.35 |
| T-2 | Antenna coil for band 4 | 51C818 | .65 |
| T-3 | Oscillator coil for bands 1, 2, 3 and 4 | 51C822 | 2.45 |
| T-4 | Input IF transformer; 455 kc | 50C183 | 1.20 |
| T-5 | Diode IF transformer; 455 kc | 50B184 | 1.20 |
| T-6 | Beat frequency oscillator coil; 455 kc | 54B031 | 1.25 |
| T-7 | Audio output transformer; 3,000 ohm primary —15 ohm secondary tapped at 3 ohms | 55A075 | .95 |
| | **TERMINAL STRIPS** | | |
| TS-1 | Antenna and ground connector strip | 88A032 | .10 |
| TS-2 | Headset plug connector strip; bakelite | 88A071 | .10 |

**MISCELLANEOUS MECHANICAL COMPONENTS**

| QUANT. IN EQUIPMENT | DESCRIPTION | HALLICRAFTER'S PART NUMBER | LIST PRICE PER COMPONENT |
|---|---|---|---|
| 2 | Knob; for Volume Control and Band Selector switches | 15A049 | .15 |
| 1 | Knob; for C. W. PITCH Control | 15A058 | .15 |
| 2 | Knob; for main TUNING and BANDSPREAD tuning Controls | 15A047 | .25 |
| 1 | Pointer; for main tuning dial | 82A102 | .15 |
| 1 | Pointer; for bandspread tuning dial | 82A103 | .15 |
| 1 | Calibrated dial assembly, complete | 83B257 | .15 |
| 1 | Dial window; glass | 22B157 | .30 |
| 6 | Octal tube sockets; Amphenol type MIP-8 | 6A035 | .10 |
| 1 | Dial lamp socket; bayonet | 86A011 | .15 |
| 2 | Tuning capacitor dial drive pulley | 28A002 | .10 |
| 1 | Tuning capacitor rear mounting bracket | 67A568 | .10 |
| 1 | Tuning capacitor front mounting bracket | 67A559 | .15 |
| 1 | Left hand switch mounting bracket | 67B560 | .10 |
| 1 | Right hand switch mounting bracket | 67B561 | .10 |
| 4 | Rubber mounting feet for cabinet | 16A007 | .10 |
| 2 | Spring washers for grounding tuning capacitor drive shafts | 4A043 | .10 |
| 4 | "C" washers; (hair-pin type) | 75A062 | .10 |
| 1 | Rear cover plate; cardboard | 32C331 | .10 |
| 1 | Bottom cover plate; painted steel | 63C220 | .45 |

NOTE: ALL PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Explanation of abbreviations: mmf—micromicrofarads; mfd—microfarads; vdcw—DC working volts; v—volts; ma—milliamperes; IF—intermediate frequency; sect.—section; REF. NO.—circuit symbol as on the schematic diagram.

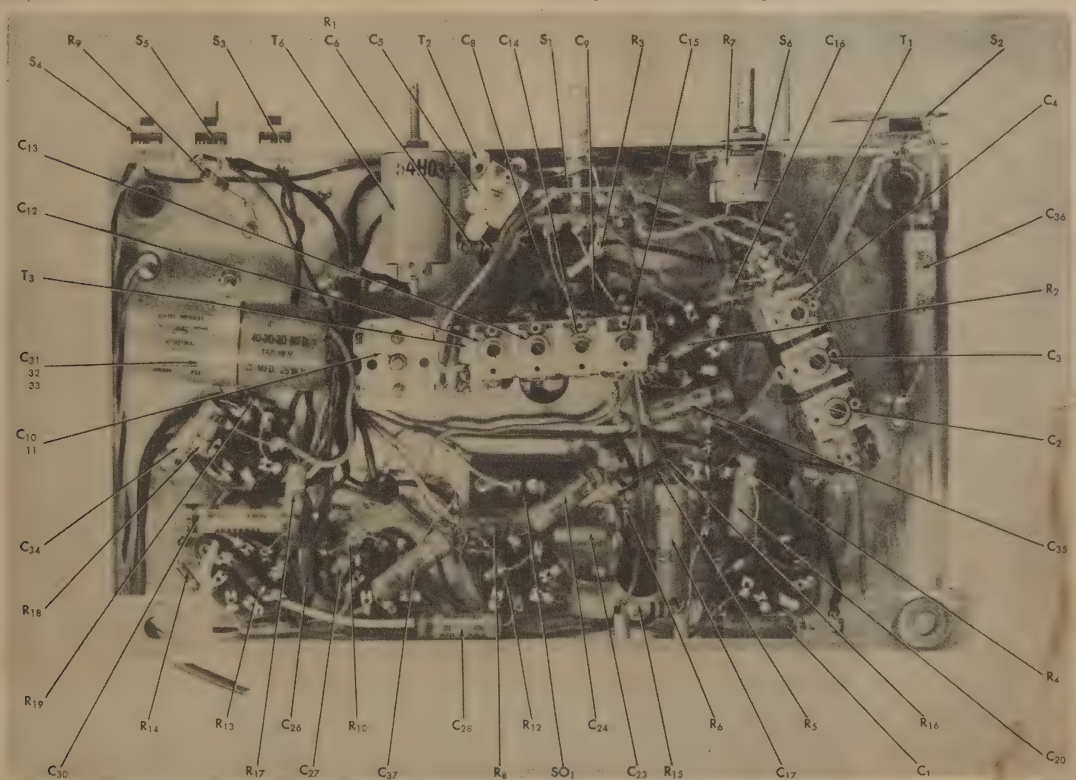



*Fig. 4. Bottom view of the receiver showing components location.*

# ALIGNMENT INSTRUCTIONS

EQUIPMENT:

1. Signal Generator capable of the ranges indicated in the Alignment Chart, including a 400 cycle audio modulator.
2. Output meter capable of handling 1 watt of audio power.
3. Standard RMA dummy consisting of a 200 mmf condenser in series with a 20uh r-f choke which is shunted by a 400 mmf condenser in series with a 400 ohm carbon resistor.
4. Non-metallic screw driver.

CONNECTIONS: Connect the Sig. Gen. "cold" lead to "G" on the antenna strip; the "hot" lead is connected as indicated in the Chart.

Connect the output meter across the terminals of socket SO-1 and remove the speaker plug from the socket and adjust the meter for 3 ohms impedance.
Caution: Set the meter at a sufficiently high range to prevent possible damage from overload.

CONTROL SETTINGS: After allowing about a ten minute warm up period, set the receiver's control as follows:

SPEAKER/PHONES switch at "SPEAKER."
VOLUME control at full clockwise (maximum).
CW/AM switch at "AM" (except for BFO adjustment).
NOISE LIMITER switch at "OFF."
BANDSPREAD TUNING control at "0," (min. cap.).
STANDBY/RECEIVE switch at "RECEIVE."

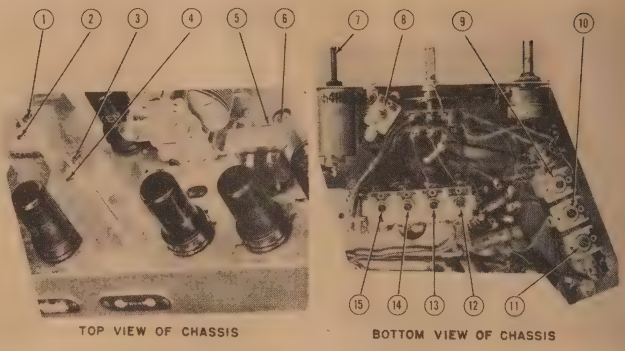



*Fig. 5. Top and bottom views of the receiver locating slugs, padders and trimmers for alignment purposes.*

| DUMMY ANT. IN SERIES WITH SIG. GENERATOR | CONNECTION OF SIG. GENERATOR OUTPUT TO RECEIVER | SIG. GEN. FREQUENCY SETTING | BAND SWITCH SETTING | RECEIVER DIAL SETTING | ADJUST SLUG, PADDER, OR TRIMMER NO. | DESCRIPTION | TYPE OF ADJUSTMENT —MAKE ADJUSTMENT FOR: | STEP NO. |
|---|---|---|---|---|---|---|---|---|
| | | | | *IF ADJUSTMENT | | | | |
| None | Stator plates of rear sect. of tuning gang | 455 kc | "1" | 1000 kc | 3 and 4<br>1 and 2 | 2nd IF<br>1st IF | Maximum output<br>Maximum output<br>Repeat steps 1 and 2 | 1<br>2 |
| BFO ADJUSTMENT—NOTE: Turn off Sig. Gen. 400 cycle modulation; set CW/AM switch at "CW"; remove Pitch Control knob and adjust slotted screw shaft. | | | | | | | | |
| None | Stator plates of rear sect. of tuning gang | 455 kc | "1" | 1000 kc | 7 | BFO slug | Zero beat | 3 |
| BAND #4 ADJUSTMENT—NOTE: Make sure 400 cycle audio modulator is turned on; AM/CW switch should be at "AM." | | | | | | | | |
| STANDARD | "A1" on antenna | 30 mc | "4" | 30 mc | 12 | Osc. Trimmer | Maximum output | 4 |
| RMA Dummy | strip | 30 mc | | 30 mc | † 8 | Mix. Trimmer | Maximum output | 5 |
| | | | | BAND #3 ADJUSTMENT | | | | |
| STANDARD | "A1" on antenna | 14 mc | "3" | 14 mc | 13 | Osc. Trimmer | Maximum output | 6 |
| RMA Dummy | strip | 14 mc | | 14 mc | † 9 | Mix. Trimmer | Maximum output | 7 |
| | | | | *BAND #2 ADJUSTMENT | | | | |
| STANDARD | "A1" on antenna | 5 mc | "2" | 5 mc | 14 | Osc. Trimmer | Maximum output | 8 |
| RMA Dummy | strip | 1.8 mc | | 1.8 mc | 6 | Osc. Padder | Maximum output and repeat step 8 | 9 |
| | | 5 mc | | 5 mc | †10 | Mix. Trimmer | Maximum output | 10 |
| | | | | *BAND #1 ADJUSTMENT | | | | |
| STANDARD | "A1" on antenna | 1500 kc | "1" | 1500 kc | 15 | Osc. Trimmer | Maximum output | 11 |
| RMA Dummy | strip | 600 kc | | 600 kc | 5 | Osc. Padder | Maximum output and repeat step 11 | 12 |
| | | 1500 kc | | 1500 kc | 11 | Mix. Trimmer | Maximum output | 13 |

*It may be necessary to repeat the indicated adjustments several times.
†Rock the main tuning capacitor slightly (turn back and forth) when making these adjustments.

**ATTENTION**

**Always give Model and Serial No. of equipment when ordering replacement parts or requesting information.**

# the hallicrafters co.

## SERVICE BULLETIN No. 2 FOR MODEL S-38

GENERAL: Model S-38 is a 6 tube AC/DC superheterodyne table model, radio receiver, incorporating 4 bands of AM/CW reception, as follows: band #1, 540 kc to 1650 kc; band #2, 1650 kc to 5.0 mc; band #3, 5.0 mc to 14.5 mc; band #4, 13.5 mc to 32.0 mc. Provision for AVC, noise limiting, BFO pitch, headset reception, standby operation, and bandspreading are provided.

REAR PANEL CONNECTIONS: Consist of line cord with plug, antenna and ground connector strip, and headset connector plug strip.

POWER SUPPLY DATA: 105 to 125 volts AC/DC line voltage. Power drain is 30 watts.

TUBE TYPES AND FUNCTION: 12SA7—mixer-oscillator; 12SK7—IF amplifier; 12SQ7GT—detector, AVC, audio amplifier; 35L6GT—audio power amplifier; 12SQ7GT—BFO and ANL; 35Z5GT—power rectifier for AC operation.

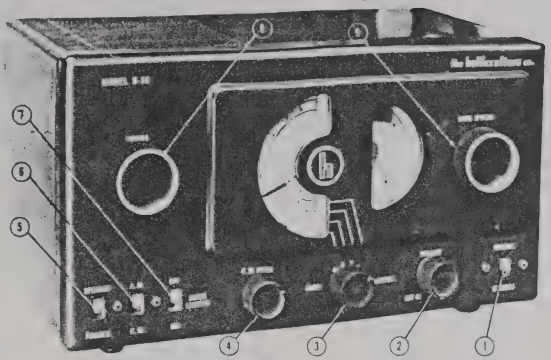



*Fig. 1. Front view of receiver showing control locations.*

### DETAILED SERVICE INFORMATION

| IF FREQUENCY | IF SELECTIVITY | IMAGE RATIO | SENSITIVITY | AUDIO OUTPUT |
|---|---|---|---|---|
| 455 kc | 7 kc wide at 6 db down<br>65 kc wide at 60 db down<br>(for 50 milliwatt output) | 2.7:1 at 30 mc<br>6:1 at 14 mc<br>10:1 at 5 mc<br>35:1 at 1500 kc | 12 microvolt at 600 kc<br>12 microvolt at 5 mc<br>11 microvolt at 14 mc<br>23 microvolt at 30 mc<br>(for 50 milliwatt output) | 675 milliwatt with less than 10% distortion at 400 cycles |

### CONTROL SETTINGS FOR PRELIMINARY TEST OPERATION (Broadcast Band)

| REF. NO. (in Fig. 1) | NAME | FUNCTION | SETTING | REF. NO. (in Fig. 1) | NAME | FUNCTION | SETTING |
|---|---|---|---|---|---|---|---|
| 1 | STANDBY/ RECEIVE | Receiver temporary standby | At "RECEIVE" | 5 | SPEAKER/ PHONES | Output selector switch | At "SPEAKER" |
| 2 | VOLUME | Audio gain control and receiver on/off switch | Half clockwise; adj. as necessary | 6 | CW/AM | BFO on/off switch AVC on/off switch | At "AM" (AVC on) |
| | | | | 7 | NOISE LIMITER | Noise peak limiting | At "OFF" |
| 3 | BAND SELECTOR | Operating band selector | Clockwise to "1" | 8 | TUNING | Main tuning control | To local station freq. on main dial scale |
| 4 | PITCH CONTROL | CW beat note pitch selector | Any position (not in use) | 9 | BAND SPREAD | Short wave band spreading | To "0" on small dial scale |

### HOW TO RESTRING DIAL CORDS

To restring the main tuning dial cord, cut a 14" length of 30 lb. test dial cord and tie one end to the tension spring of the main tuning capacitor drive pulley at position "1" on the diagram. Following the numbers 1 through 15, wind the cord on the pulley and knob drive shaft. At position "15," stretch the tension spring and tie the cord securely. Cut off the excess cord. Note that two complete turns are wound on the knob drive shaft.

To restring the bandspread tuning dial cord, cut a 16" length of dial cord and follow the procedure as explained above, except start at position "A" on the diagram and proceed through position "S." Note that the knob drive shaft has two complete turns.

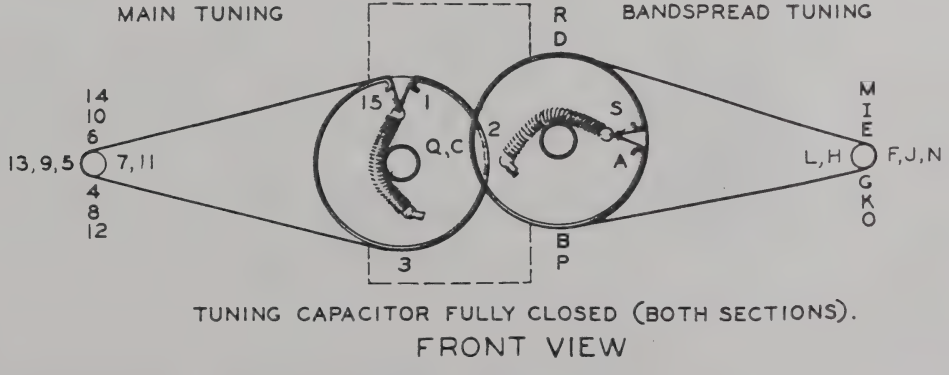



*Fig. 2. Dial cable stringing procedure.*

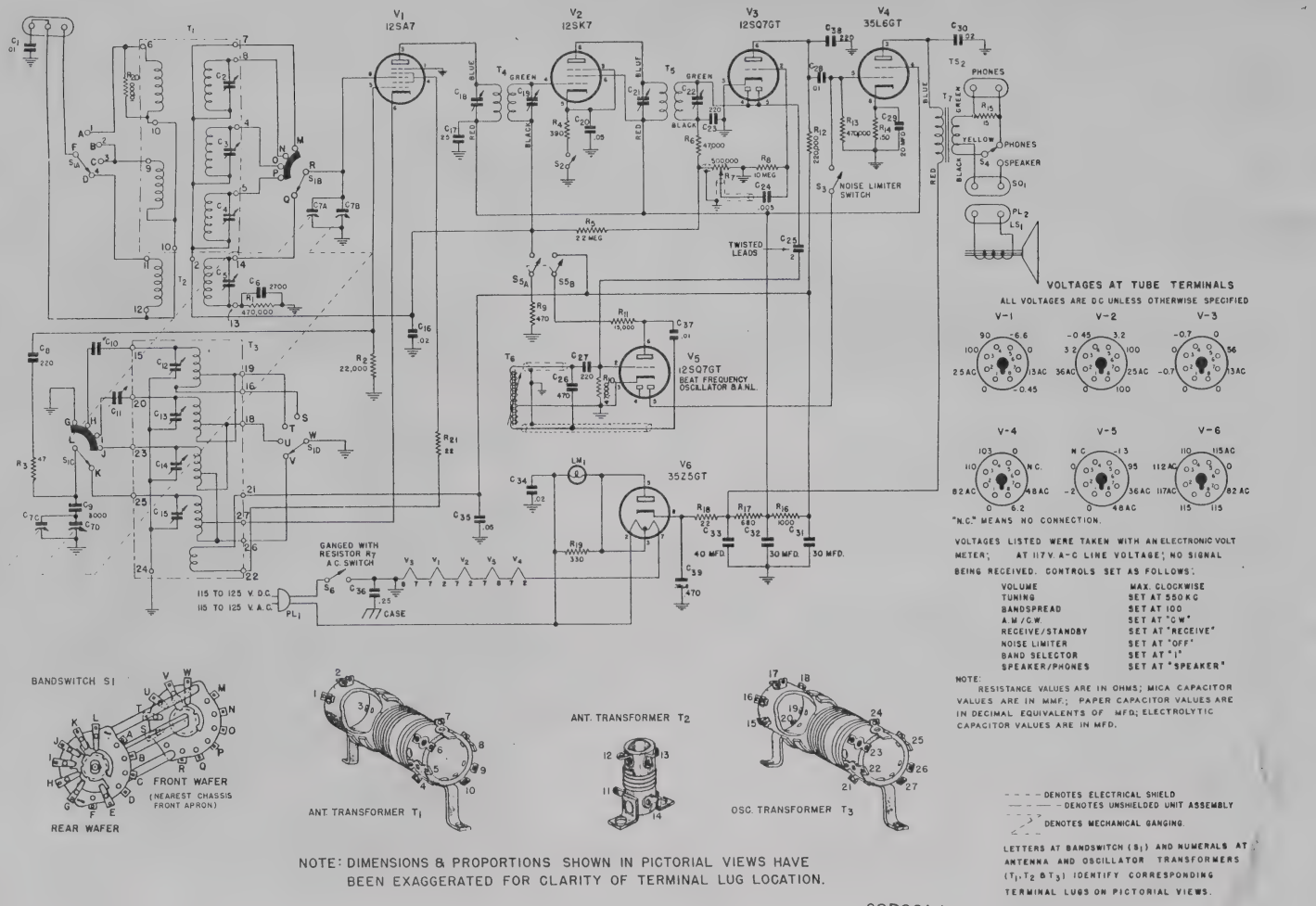



*Fig. 3 Schematic diagram including tube terminal voltages and pictorial views of bandswitch, mixer and oscillator coil forms for terminal lug location and cross reference to the schematic.*

# REPLACEMENT PARTS

| REF. NO. | DESCRIPTION | HALLICRAFTER'S PART NUMBER | LIST PRICE PER COMPONENT |
|---|---|---|---|
| | **CAPACITORS** | | |
| C-1 | 0.01 mfd; 600 vdcw; paper | 46AY103J | $ .10 |
| C-2, 3 & 4 | Trimmer Unit for antenna transformer T-1 | 44B129 | .40 |
| C-5 | Trimmer for antenna transformer T-2 | 44A039 | .10 |
| C-6 | 2700 mmf; ±5%; 500 vdcw; mica | CM30A272J | .30 |
| C-7 | Tuning capacitor; air; 2 sections ganged | 48C162 | 2.90 |
| C-8, 23, 27 & 38 | 220 mmf; 500 vdcw; mica | CM20A221K | .15 |
| C-9 | 3000 mmf; 5%; 500 vdcw; mica | CM30A302J | |
| C-10 & 11 | Dual padder for oscillator transformer T-3 | 44A152 | .65 |
| C-12, 13, 14 & 15 | Trimmer Unit for oscillator transformer T-3 | 44B159 | .50 |
| C-16 & 34 | 0.02 mfd; 400 vdcw; paper | 46AW203J | .10 |
| C-17 & 36 | 0.25 mfd; 200 vdcw; paper | 46AT254J | .15 |
| C-18, 19, 21 & 22 | Trimmers for IF transformers T-4 and T-5 | 44A097 | .25 |
| C-20 & 35 | 0.05 mfd; 200 vdcw; paper | 46AU503J | .10 |
| C-24 | 0.005 mfd; 400 vdcw; paper | 46AW502J | .10 |
| C-25 | 2 mmf; twisted insulated wire leads; NOT AVAILABLE AS A SPARE PART. | | |
| C-26 & 39 | 470 mmf; 500 vdcw; mica | CM20A471K | .20 |
| C-28 & 37 | 0.01 mfd; 400 vdcw; paper | 46AW103J | .10 |
| C-29, 31, 32 & 33 | Electrolytic; four section unit; color coded leads; sect. 1(C-29) 20 mfd, 25 vdcw; sect. 2 & 3(C-31 & 32) 30 mfd, 150 vdcw; sect. 4(C-33) 40 mfd, 150 vdcw | 45B091 | .80 |
| C-30 | 0.02 mfd; 600 vdcw; paper | 46AY203J | .10 |
| | **PILOT LAMP** | | |
| LM-1 | 6/8 v @ 150ma; brown bead; G. E. type 47 | 39A004 | .10 |
| | **LOUDSPEAKER** | | |
| LS-1 | 5" P.M. speaker; 3.2 ohm voice coil | 85C035 | 2.50 |
| | **PLUGS** | | |
| PL-1 | AC line cord with two prong plug at one end | 87A078 | .35 |
| PL-2 | Speaker voice coil connector plug | 88A072 | .10 |
| | **RESISTORS** | | |
| R-1 & 13 | 470,000 ohm; ½ watt; carbon | RC20AE474M | .10 |
| R-2 | 22,000 ohm; ½ watt; carbon | RC20AE223M | .10 |
| R-3 | 47 ohm; ½ watt; carbon | RC20AE470M | .10 |
| R-4 | 390 ohm; ±10%; ½ watt; carbon | RC20AE391K | .10 |
| R-5 | 2.2 megohm; ½ watt; carbon | RC20AE225M | .10 |
| R-6 & 10 | 47,000 ohm; ½ watt; carbon | RC20AE473M | .10 |
| R-7 & S-6 | Volume Control; ½ megohm; includes SPST toggle action switch assembly on rear | 25B094 | .50 |
| R-8 | 10 megohm; ½ watt; carbon | RC20AE106M | .10 |
| R-9 & 11 | 470 ohm; ±10%; ½ watt; carbon | RC20AE471K | .10 |
| R-12 | 220,000 ohm; ½ watt; carbon | RC20AE224M | .10 |
| R-14 | 150 ohm; ±10%; ½ watt; carbon | RC20AE151K | .10 |
| R-15 | 15 ohm; ½ watt; carbon | RC20AE150M | .10 |
| R-16 | 1,000 ohm; ½ watt; carbon | RC20AE102M | .10 |
| R-17 | 680 ohm; 1 watt; carbon | RC30AE681M | .10 |
| R-18 & 21 | 22 ohm; ½ watt; carbon | RC20AE220M | .10 |
| R-19 | 330 ohm; ½ watt; carbon | RC20AE331M | .10 |
| R-20 | 10,000 ohm; ½ watt; carbon | RC20AE103M | .10 |

NOTE: Mica dielectric capacitors have a tolerance of ±10% unless otherwise specified; paper dielectric capacitors tolerance is −10 +40%; carbon resistors have a tolerance of ±20% unless otherwise specified.

| REF. NO. | DESCRIPTION | HALLICRAFTER'S PART NUMBER | LIST PRICE PER COMPONENT |
|---|---|---|---|
| | **SWITCHES** | | |
| S-1a, b, c & d | Bandswitch; two sections ganged; rotary four position | 60A240 | $ .95 |
| S-2 & 3 | "RECEIVE-STANDBY" and "NOISE LIMITER" switches; slide action; SPST | 60A244 | .20 |
| S-4 | "SPEAKER-PHONES" switch; slide action; SPDT | 60A243 | .20 |
| S-5 | "A.M.-C.W." switch; slide action; DPST | 60A245 | .25 |
| | **TRANSFORMERS** | | |
| T-1 | Antenna coil for bands 1, 2 and 3 | 51C821 | 2.35 |
| T-2 | Antenna coil for band 4 | 51C818 | .65 |
| T-3 | Oscillator coil for bands 1, 2, 3 and 4 | 51C822 | 2.45 |
| T-4 | Input IF transformer; 455 kc | 50C183 | 1.20 |
| T-5 | Diode IF transformer; 455 kc | 50B184 | 1.20 |
| T-6 | Beat frequency oscillator coil; 455 kc | 54B031 | 1.25 |
| T-7 | Audio output transformer; 3,000 ohm primary —15 ohm secondary tapped at 3 ohms | 55A075 | .95 |
| | **TERMINAL STRIPS** | | |
| TS-1 | Antenna and ground connector strip | 88A032 | .10 |
| TS-2 | Headset plug connector strip; bakelite | 88A071 | .10 |

**MISCELLANEOUS MECHANICAL COMPONENTS**

| QUANT. IN EQUIPMENT | DESCRIPTION | HALLICRAFTER'S PART NUMBER | LIST PRICE PER COMPONENT |
|---|---|---|---|
| 2 | Knob; for Volume Control and Band Selector switches | 15A049 | .15 |
| 1 | Knob; for C. W. PITCH Control | 15A058 | .15 |
| 2 | Knob; for main TUNING and BANDSPREAD tuning Controls | 15A047 | .25 |
| 1 | Pointer; for main tuning dial | 82A102 | .15 |
| 1 | Pointer; for bandspread tuning dial | 82A103 | .15 |
| 1 | Calibrated dial assembly, complete | 83B257 | .15 |
| 1 | Dial window; glass | 22B157 | .30 |
| 6 | Octal tube sockets; Amphenol type MIP-8 | 6A035 | .10 |
| 1 | Dial lamp socket; bayonet | 86A011 | .15 |
| 2 | Tuning capacitor dial drive pulley | 28A002 | .10 |
| 1 | Tuning capacitor rear mounting bracket | 67A568 | .10 |
| 1 | Tuning capacitor front mounting bracket | 67A559 | .15 |
| 1 | Left hand switch mounting bracket | 67B560 | .10 |
| 1 | Right hand switch mounting bracket | 67B561 | .10 |
| 4 | Rubber mounting feet for cabinet | 16A007 | .10 |
| 2 | Spring washers for grounding tuning capacitor drive shafts | 4A043 | .10 |
| 4 | "C" washers; (hair-pin type) | 75A062 | .10 |
| 1 | Rear cover plate; cardboard | 32C331 | .10 |
| 1 | Bottom cover plate; painted steel | 63C220 | .45 |

NOTE: ALL PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Explanation of abbreviations: mmf—micromicrofarads; mfd—microfarads; vdcw—DC working volts; v—volts; ma—milliamperes; IF—intermediate frequency; sect.—section; REF. NO.—circuit symbol as on the schematic diagram.

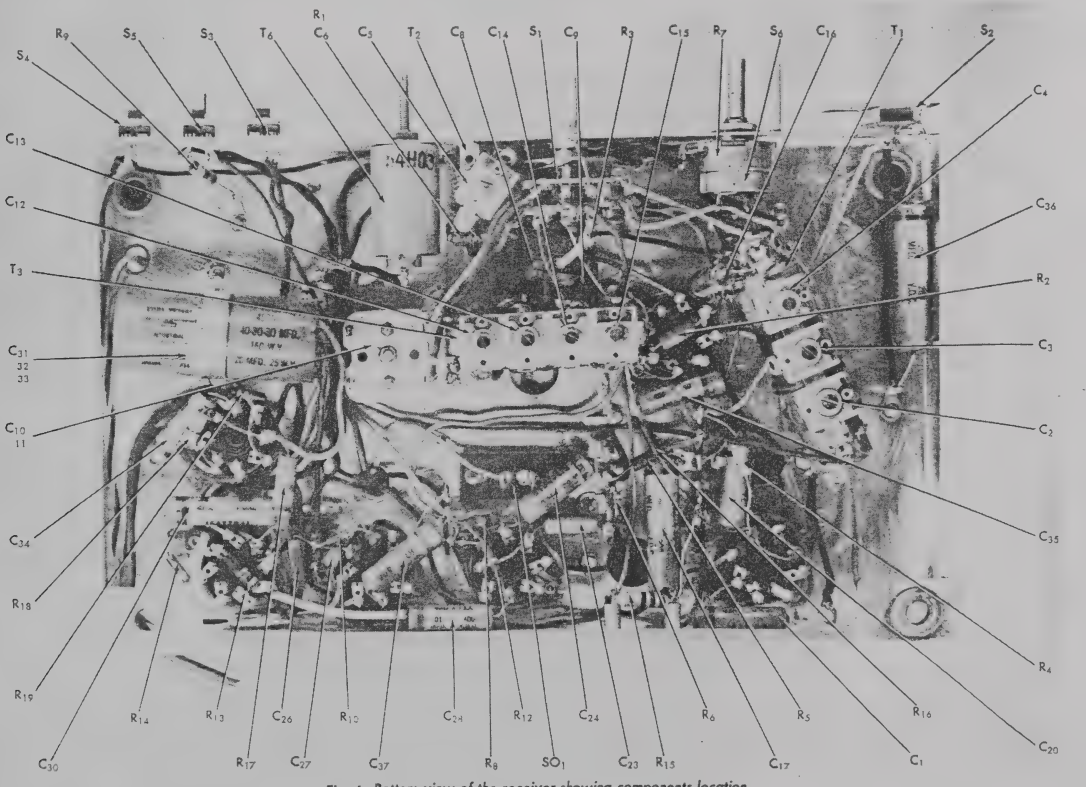



*Fig. 4. Bottom view of the receiver showing components location.*

# ALIGNMENT INSTRUCTIONS

EQUIPMENT:

1. Signal Generator capable of the ranges indicated in the Alignment Chart, including a 400 cycle audio modulator.
2. Output meter capable of handling 1 watt of audio power.
3. Standard RMA dummy consisting of a 200 mmf condenser in series with a 20uh r-f choke which is shunted by a 400 mmf condenser in series with a 400 ohm carbon resistor.
4. Non-metallic screw driver.

CONNECTIONS: Connect the Sig. Gen. "cold" lead to "G" on the antenna strip; the "hot" lead is connected as indicated in the Chart.

Connect the output meter across the terminals of socket SO-1 and remove the speaker plug from the socket and adjust the meter for 3 ohms impedance.
Caution: Set the meter at a sufficiently high range to prevent possible damage from overload.

CONTROL SETTINGS: After allowing about a ten minute warm up period, set the receiver's control as follows:

SPEAKER/PHONES switch at "SPEAKER."
VOLUME control at full clockwise (maximum).
CW/AM switch at "AM" (except for BFO adjustment).
NOISE LIMITER switch at "OFF."
BANDSPREAD TUNING control at "0," (min. cap.).
STANDBY/RECEIVE switch at "RECEIVE."

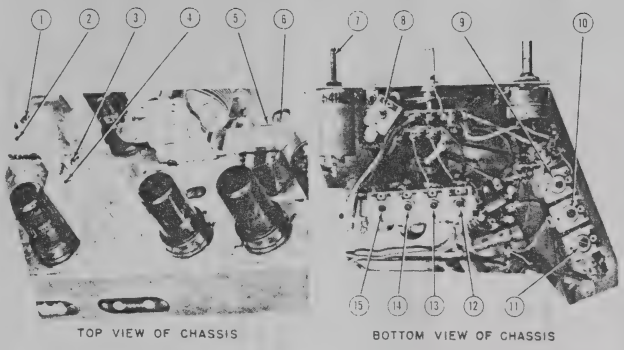



*Fig. 5. Top and bottom views of the receiver locating slugs, padders and trimmers for alignment purposes.*

| DUMMY ANT. IN SERIES WITH SIG. GENERATOR | CONNECTION OF SIG. GENERATOR OUTPUT TO RECEIVER | SIG. GEN. FREQUENCY SETTING | BAND SWITCH SETTING | RECEIVER DIAL SETTING | ADJUST SLUG, PADDER, OR TRIMMER NO. | DESCRIPTION | TYPE OF ADJUSTMENT —MAKE ADJUSTMENT FOR: | STEP NO. |
|---|---|---|---|---|---|---|---|---|
| | | | | *IF ADJUSTMENT | | | | |
| None | Stator plates of rear sect. of tuning gang | 455 kc | "1" | 1000 kc | 3 and 4<br>1 and 2 | 2nd IF<br>1st IF | Maximum output<br>Maximum output<br>Repeat steps 1 and 2 | 1<br>2 |
| BFO ADJUSTMENT—NOTE: Turn off Sig. Gen. 400 cycle modulation; set CW/AM switch at "CW"; remove Pitch Control knob and adjust slotted screw shaft. | | | | | | | | |
| None | Stator plates of rear sect. of tuning gang | 455 kc | "1" | 1000 kc | 7 | BFO slug | Zero beat | 3 |
| BAND #4 ADJUSTMENT—NOTE: Make sure 400 cycle audio modulator is turned on; AM/CW switch should be at "AM." | | | | | | | | |
| STANDARD<br>RMA Dummy | "A1" on antenna strip | 30 mc<br>30 mc | "4" | 30 mc<br>30 mc | 12<br>† 8 | Osc. Trimmer<br>Mix. Trimmer | Maximum output<br>Maximum output | 4<br>5 |
| | | | | BAND #3 ADJUSTMENT | | | | |
| STANDARD<br>RMA Dummy | "A1" on antenna strip | 14 mc<br>14 mc | "3" | 14 mc<br>14 mc | 13<br>† 9 | Osc. Trimmer<br>Mix. Trimmer | Maximum output<br>Maximum output | 6<br>7 |
| | | | | *BAND #2 ADJUSTMENT | | | | |
| STANDARD<br>RMA Dummy | "A1" on antenna strip | 5 mc<br>1.8 mc<br>5 mc | "2" | 5 mc<br>1.8 mc<br>5 mc | 14<br>6<br>†10 | Osc. Trimmer<br>Osc. Padder<br>Mix. Trimmer | Maximum output<br>Maximum output and repeat step 8<br>Maximum output | 8<br>9<br>10 |
| | | | | *BAND #1 ADJUSTMENT | | | | |
| STANDARD<br>RMA Dummy | "A1" on antenna strip | 1500 kc<br>600 kc<br>1500 kc | "1" | 1500 kc<br>600 kc<br>1500 kc | 15<br>5<br>11 | Osc. Trimmer<br>Osc. Padder<br>Mix. Trimmer | Maximum output<br>Maximum output and repeat step 11<br>Maximum output | 11<br>12<br>13 |

*It may be necessary to repeat the indicated adjustments several times.
†Rock the main tuning capacitor slightly (turn back and forth) when making these adjustments.

**ATTENTION**

**Always give Model and Serial No. of equipment when ordering replacement parts or requesting information.**

**SERVICE OR OPERATING QUESTIONS**—For any further information regarding operation or servicing of your radio, contact your Hallicrafters dealer. The Hallicrafters Co. maintains an extensive system of authorized service centers where any required service will be performed promptly and efficiently at a nominal charge. All Hallicrafters Authorized Service Centers display the sign shown at the right. For the location of the one nearest you, consult your dealer or telephone directory.


## Warranty

"The Hallicrafters Company warrants each new radio product manufactured by it to be free from defective material and workmanship and agrees to remedy any such defect or to furnish a new part in exchange for any part of any unit of its manufacture which under normal installation, use and service discloses such defect, provided the unit is delivered by the owner to our authorized radio dealer wholesaler, from whom purchased, or, authorized service center, intact, for examination with all transportation charges prepaid within ninety days from the date of sale to original purchaser and provided that such examination discloses in our judgment that it is thus defective.

This warranty does not extend to any of our radio products which have been subjected to misuse, neglect, accident, incorrect wiring not our own, improper installation, or to use in violation of instructions furnished by us nor extend to units which have been repaired or altered outside of our factory or authorized service center, nor to cases where the serial number thereof has been removed, defaced or changed, nor to accessories used therewith not of our own manufacture.

Any part of a unit approved for remedy or exchange hereunder will be remedied or exchanged by the authorized radio dealer or wholesaler without charge to the owner.

This warranty is in lieu of all other warranties expressed or implied and no representative or person is authorized to assume for us any other liability in connection with the sale of our radio products.

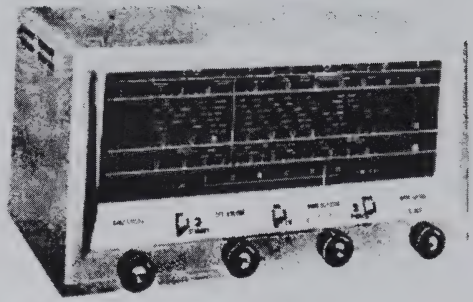
*the Hallicrafters co.* 94X622

the hallicrafters co.
4401 WEST 5TH AVENUE
Chicago 24, Ill.

094-901834-A

# *Owner's Guide*

## Model S-38E



## GENERAL DESCRIPTION

Your new Hallicrafters Receiver tunes from 540 kilocycles to 31 megacycles to bring you the finest in world-wide radio reception. You'll hear foreign and domestic shortwave broadcasts, amateurs, police, aircraft, ships, and countless other exciting distant stations... as well as all your favorite programs on standard broadcast. The receiver employs the latest type superheterodyne circuit and provides for reception of AM (voice) and CW (code) signals over its entire tuning range. Special features in your receiver include an electrical bandspread dial for fine tuning of the amateur and shortwave bands, a powerful built-in Alnico V permanent magnet speaker, provisions for headphone operation, and a receive-standby switch on the front panel that permits you to silence the receiver without turning it off. Your receiver has an unusually high degree of sensitivity necessary to receive weak and distant stations. Careless operation may result in excess noise or background hiss. These undesirable effects can be held to a minimum by careful adjustment of the tuning controls as well as the proper selection and arrangement of the antenna.

### POWER SOURCE

The receiver is designed to operate on 105 to 125 volt 50/60 cycle, AC, or DC current. It may also be operated on 210 to 250 volt AC/DC current by using Line Cord Adapter 087-401566, available as an accessory from your Hallicrafters dealer. Power consumption is 30 watts.

### HEADPHONES

Connections are provided at the rear of the receiver for connecting headphones. Any commercial headphones ranging from 50 to 10, 000 ohms may be used. For headphone operation, set the Speaker-Phones selector switch at "Phones".

the hallicrafters co.
MANUFACTURERS OF RADIO, TELEVISION AND ELECTRONIC EQUIPMENT CHICAGO 24, U. S. A.

## ANTENNAS

The receiver is designed to operate from either a single-wire antenna, or a halfwave doublet or other tuned antenna. Antenna connections are made to a three terminal strip at the rear of the receiver marked "A1", "A2", and "G".

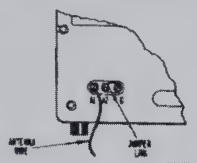


Fig. 2. Single-Wire Antenna

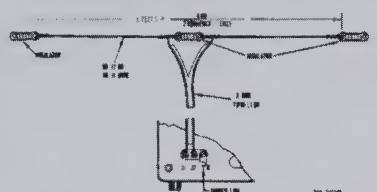


Fig. 3. Doublet Antenna Using Twin-Lead Transmission Line

## SINGLE-WIRE ANTENNA

The simplest antenna and one which will provide satisfactory performance throughout the entire tuning range is a conventional single-wire antenna. In most localities, satisfactory results can be obtained with just the 15-foot antenna wire included with the receiver. It is simply necessary to attach one end of this wire to terminal "A1", connect the jumper link between "A2" and "G", and then run the wire about the room in any convenient manner. (See Fig. 2) If the receiver is operated in a steel constructed building or where receiving conditions are exceptionally poor, an outside antenna 50 to 100 feet long may be necessary. In some locations, reception may be improved by connecting a ground wire (ordinary copper wire) from terminal "G" to a cold water pipe or outside ground rod. While the use of an outside ground rod installed in accordance with Insurance Underwriter's Laboratories requirements is adequate protection against lightning, we strongly recommend an additional connection to the nearest cold water pipe to eliminate any shock hazard.

## HALF-WAVE DOUBLET ANTENNA

For top performance, especially on the shortwave and amateur bands, the use of a half-wave doublet or other type of antenna employing a 52 to 600 ohm transmission line is recommended. A typical doublet antenna installation is shown in Fig. 3. The doublet antenna should be cut to the proper length for the most used frequency or band of frequencies. The overall length in feet of a doublet antenna is determined by the following formula:

$$\text{Length in feet} = \frac{468}{\text{Frequency in megacycles}}$$

For maximum signal pickup, the doublet antenna should be erected with its length at right angles to the desired station. When a transmission line such as "twinlead" or a twisted pair is used, the transmission line connects to terminals "A1" and "A2", and the jumper link between "A2" and "G" is disconnected. The doublet antenna provides optimum performance only at the frequency for which it is cut. Therefore, it may be desirable for reception on frequencies remote from the antenna frequency to utilize the antenna as a single wire type. This is accomplished by connecting the two transmission line leads together and connecting them to terminal "A1". The jumper link in this case should be connected between terminals "A2" and "G"

## TUNING DIAL

The top dial scale is the standard broadcast band. To convert the readings on this band to kilocycles simply add one zero. For example: 70 on the dial is 700 kilocycles. The shortwave bands are marked 2, 3, and 4. The readings on these bands are in megacycles. The standard broadcast band is marked with a "CD" emblem and a dot at 640 and 1240 kilocycles to indicate the two official civil defense frequencies. In a civil defense emergency, tune to either of these two frequencies for official civil defense news, instructions, and information.

## RECEIVE-STANDBY SWITCH

This switch is normally set at "Receive". When set at "Standby", the receiver is silenced but the tubes remain at operating temperature for instant use. To resume reception at any time, simply return the switch to "Receive" position.

## AM-CW SWITCH

Set this switch at "AM" to listen to voice or musical broadcasts. Set it at "CW" only if you wish to hear code signals.

## BAND SELECTOR CONTROL

Set this control for the band you wish to tune. The four positions of this control correspond to the band numbers at the left side of the dial.

## OFF-VOLUME CONTROL

Turn this control clockwise to turn the receiver on and to increase volume. Allow about one minute for the tubes to warm up. When operating on DC (direct current), reverse the power plug in the wall outlet if the receiver does not operate after the one minute warm up, as the receiver will operate ONLY with the plug in one position. When operating on AC (alternating current), try reversing the power plug for minimum hum after the receiver is in operation. To turn the receiver off, simply rotate the Off-Volume control fully counterclockwise, until a click is heard.

## TUNING AND BANDSPREAD CONTROLS

Wide tuning is performed with the Tuning control and fine tuning with the Bandspread control. To tune the receiver, set the Bandspread dial pointer at "0" and then slowly turn the Tuning control to the desired station. When trying to locate weak distant stations, it is suggested that the Off-Volume control be initially set near maximum and then readjusted for the desired level after the station has been tuned in. For CW (code) reception, adjust the Tuning control for the desired pitch when tuning in the station. The dial readings will correspond to the station frequencies only if the Bandspread dial pointer is set at "0".

The Bandspread control is an electrical fine tuning adjustment which permits you to accurately tune in stations on crowded bands by spreading them out. It may be used in two different ways. The first method of tuning is used when it is desired to tune in a single signal with precision accuracy. The Bandspread dial pointer is set at about "5", then the signal is located with the Tuning control, and finally the signal is accurately tuned in by "rocking" the Bandspread control (turning it a few degrees to the left and right) until the signal is loudest and clearest. The second method of tuning is used when it is desired to tune through a range of frequencies, such as the amateur bands. Set the bandspread dial pointer at "0", set the Tuning control for the high end of the selected band or range of frequencies, and then tune through the range with the Bandspread control. Turning the Bandspread control from "0" to "100" tunes the receiver progressively lower in frequency.

# SERVICE DATA
# MODEL S-38E-EB-EM

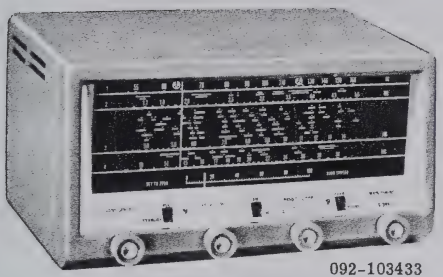



*Figure 1. Hallicrafter's Model S-38E*

### TECHNICAL SPECIFICATIONS

| | |
|---|---|
| TUBES | Five including rectifier |
| SPEAKER | 5-inch PM; 3. 2-ohm voice coil |
| HEADPHONE OUTPUT | 15 ohms |
| ANTENNA INPUT | For single wire or 52-600 ohm balanced or unbalanced line |
| POWER SOURCE | 105-125 volts DC or 50/60 cycles AC |
| POWER CONSUMPTION | 30 watts |
| RECEPTION | AM and CW |
| INTERMEDIATE FREQUENCY | 455 KC |
| WEIGHT | Net-12 lb., Shipping-14 lb. |
| DIMENSIONS | 12-7/8" x 7" x 9" deep |

### TUBE AND DIAL LAMP REPLACEMENT

The dial lamp and tubes are accessible for replacement by removing the cabinet. For types used, refer to Page 4.

CAUTION: Before attempting to make any replacement, rotate the Bandspread control fully clockwise and the Tuning control fully counterclockwise to prevent damage to the tuning gang.

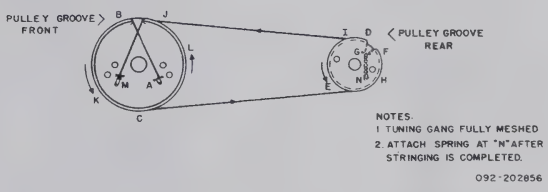



*Figure 2. Main Tuning Gang Drive Stringing Diagram*

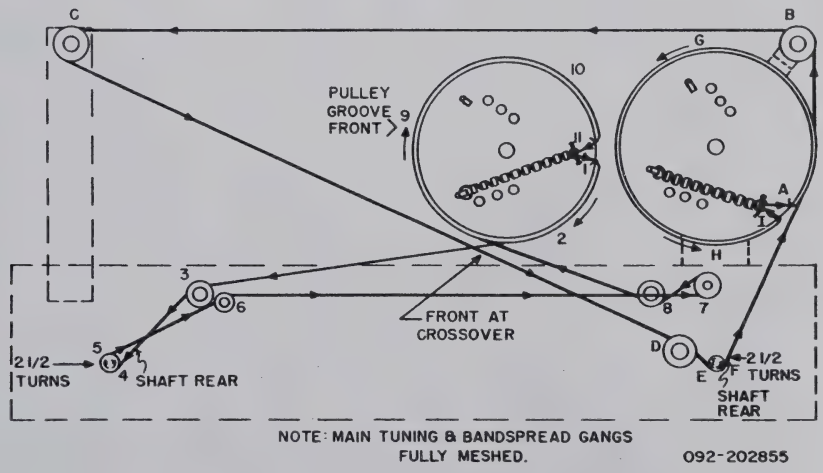



*Figure 3. Main Tuning and Bandspread Gang Pointer Drive Stringing Diagrams*

the hallicrafters co.
4401 W. FIFTH AVENUE · CHICAGO 24, ILLINOIS

# ALIGNMENT PROCEDURE

- Use an amplitude modulated generator covering 455 KC to 30 MC.
- Use a modulated output for every step except Step 2.
- Connect output meter across speaker voice coil.
- Use a non-metallic alignment tool.
- Standard RETMA dummy antenna as shown in Fig. 4.
- Set the AM/CW switch at AM, (except for BFO adjustment), SPEAKER/PHONES switch at SPEAKER, VOLUME control at maximum. RECEIVE/STANDBY switch at RECEIVE and the BAND SPREAD control at 0.
- See Figs. 5 and 6 for location of alignment adjustments.

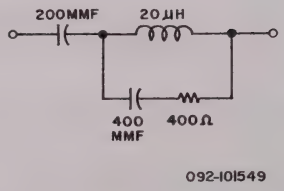



*Figure 4. RETMA Dummy Antenna*

| Step | Signal Generator Connections | Generator Frequency | Band Selector Setting | Receiver Dial Setting | Adjust |
|---|---|---|---|---|---|
| | | ***IF ALIGNMENT*** | | | |
| 1 | High side thru a .01 mfd. capacitor to stator plates of front section of TUNING gang. Low side to chassis. | 455 KC | 1 | 1.0 MC | A, B, C and D for maximum output. Keep reducing gen. output so that the reading on the output meter does not exceed 50 milliwatts. |
| | | ***BFO ADJUSTMENT*** | | | |
| *2 | Same as Step 1. | 455 KC (No Mod.) | 1 | 1.0 MC | Set the AM/CW switch at CW. For correct BFO operation, vary the coupling between lead E and pins 1 and 5 of 12BA6 (V2) for a nominal beat note. Phasing lead E toward pin 1 increases the strength of the beat. |
| | | ***RF ALIGNMENT*** | | | |
| 3 | High side thru RETMA antenna to terminal A1 on back of chassis. Low side to chassis. Connect jumper between A2 and G. | 30 MC | 4 | 30 MC | F and G for maximum output as in Step 1. |
| 4 | Same as Step 3. | 14 MC | 3 | 14 MC | H and J for maximum output as in Step 1. |
| 5 | Same as Step 3. | 5 MC | 2 | 5 MC | K and L for maximum output as in Step 1. |
| 6 | Same as Step 3. | 1500 KC | 1 | 1.5 MC | M and N for maximum output as in Step 1. |
| | | 600 KC | 1 | .6 MC | P for maximum output as in Step 1. |

* Step 2 is usually unnecessary. Adjustment should be made ONLY if a weak beat note is obtained on strong CW signals indictating lack of coupling between wire lead E and pins 1 and 5 of 12BA6.

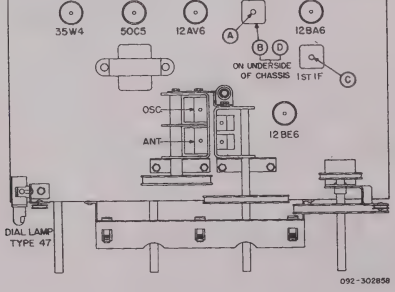



*Figure 5. Chassis, Top View*

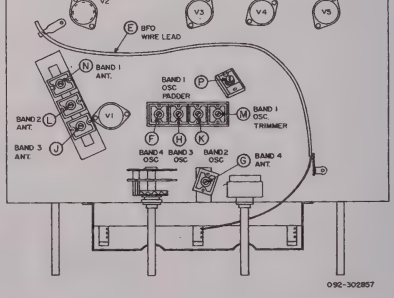



*Figure 6. Chassis, Bottom View*

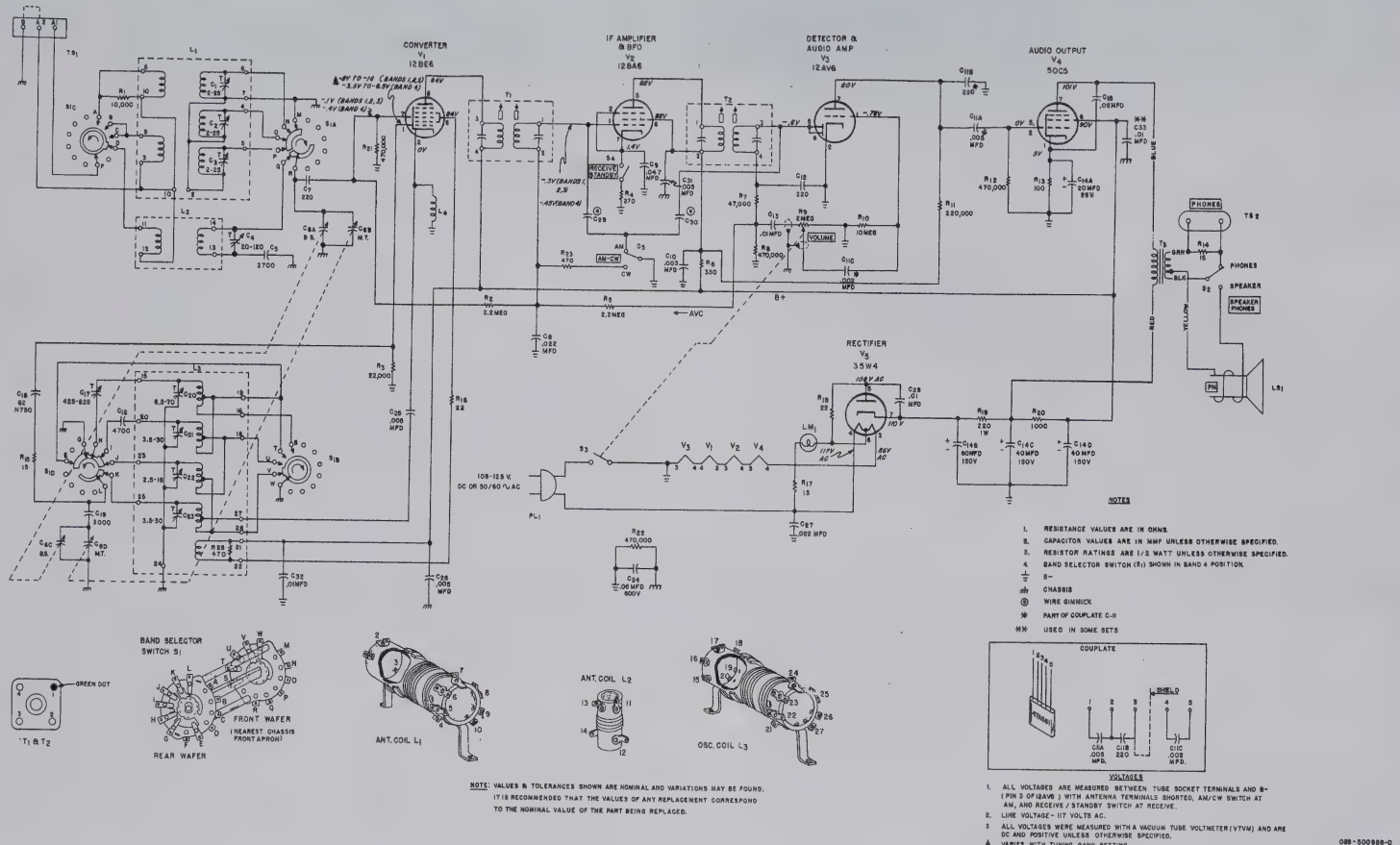



*Figure 7. Schematic Diagram*

# SERVICE PARTS LIST

| Schematic Symbol | Description | Hallicrafters Part Number |
|---|---|---|
| | ***CAPACITORS*** | |
| C-1, 2, 3 | Trimmer, Compression Mica, 3 Section; 2-25 mmf | 044-200129 |
| C-4 | 20-120 mmf; Ceramic Trimmer | 044-100424 |
| C-5 | 2700 mmf, 5%, 500V; Mica | 470-412272 |
| C-6A-B-C-D | Tuning, General Coverage; Inc. Bracket and Pulley | 048-300372 |
| C-7, 12 | 220 mmf, 10%, 500V; Mica | 470-213221 |
| C-8, 15, 27 | . 022 mfd, 600V; Tubular Paper | 499-034223 |
| C-9 | . 047 mfd, 600V; Tubular Paper | 499-034473 |
| C-10 | . 003 mfd, 600V; Tubular Paper | 499-034332 |
| C-11A-B-C | Printed Circuit Plate, . 005 mfd. 220 mmf, . 002 mfd | 047-100581 |
| C-13 | . 01 mfd, 600V; Tubular Paper | 499-034103 |
| C-14A-B-C-D | Filter, 4 Section;20 mfd @ 25V 60-40-40 mfd @ 150V | 045-300091 |
| C-16 | 82 mmf, 10%, N750; Ceramic Tubular | 491-006820-95 |
| C-17 | 425-625 mmf; Mica Trimmer | 044-100349 |
| C-18 | 4700 mmf, 5%, 500V; Mica | 470-412472 |
| C-19 | 3000 mmf, 5%, 500V; Mica | 470-412302 |
| C-20, 21, 22 | Trimmer, Compression Mica, 4 Section; 6. 5-70 mmf, 3. 5-30 mmf, 2. 5-18 mmf, 3. 5-30 mmf. | 044-200159 |
| C-24 | . 05 mfd, 600V; Tubular Paper | 499-033503 |
| C-25, 26 | . 005 mfd, 450V; Ceramic Disc | 047-100168 |
| C-27 | . 022 mfd, 600V; Molded Tubular Paper | 499-034223 |
| C-28, 33 | . 01 mfd, 450V; Ceramic Disc | 047-000224 |
| C-31 | . 005 mfd, 20%, 500V; Ceramic Disc | 047-100442 |
| C-32 | . 01 mfd, 400V; Tubular Paper | 499-024103 |
| | ****RESISTORS*** | |
| R-1 | 10K ohms | 451-252103 |
| R-2, 5 | 2. 2 megohms | 451-252225 |
| R-3 | 22K ohms | 451-252223 |
| R-4 | 270 ohms | 451-252271 |
| R-6 | 330 ohms | 451-252331 |
| R-7 | 47K ohms | 451-252473 |
| R-8, 12, 21, 22 | 470K ohms | 451-252474 |
| R-9 | 2 megohms, Variable; Volume Control (Inc. On-Off switch S-3) | 025-201479 |
| R-10 | 10 megohms | 451-252106 |
| R-11 | 220K ohms | 451-252224 |
| R-13 | 100 ohms | 451-252101 |
| R-14, 15, 17 | 15 ohms | 451-252150 |
| R-16, 18 | 22 ohms | 451-252220 |
| R-19 | 220 ohms, 1 watt | 451-352221 |
| R-20 | 1K ohm | 451-252102 |
| R-23, 25 | 470 ohms | 451-252471 |

* All Resistors 10%, 1/2 watt carbon type unless otherwise specified.

| | | |
|---|---|---|
| | ***SWITCHES*** | |
| S-1A-B-C-D | Rotary Wafer; Band Selector | 060-300861 |
| S-2, 4, 5 | SPDT Slide; Speaker-Phones, AM-CW, and Receive-Standby | 060-100477 |

| Schematic Symbol | Description | Hallicrafters Part Number |
|---|---|---|
| | ***COILS AND TRANSFORMERS*** | |
| **L-1, C-1, 2, 3 | Coil and Trimmer Assembly, Antenna; Bands 1, 2, and 3 | 051-302132 |
| L-2 | Coil, Antenna; Band 4 | 051-201015 |
| **L-3, C-20, 21, 22, 23 | Coil and Trimmer Assembly, Oscillator All Bands | 051-302133 |
| L-4 | Choke, RFI, 540 uh | 053-100107 |
| T-1 | Transformer, 1st IF | 050-300531 |
| T-2 | Transformer, 2nd IF | 050-300532 |
| T-3 | Transformer, Audio Output | 055-300347 |

** The Trimmer Capacitor Assemblies are also available separately. See "CAPACITORS".

| | | |
|---|---|---|
| | ***SOCKETS AND CONNECTORS*** | |
| TS-1 | Terminal Strip, Antenna | 088-100671 |
| TS-2 | Twin Jack Strip, Phones | 088-100071 |
| | Socket, Dial Lamp (Inc. Leads) | 086-100122 |
| | Socket, 7-Pin Miniature | 006-100308 |
| | ***TUBES AND DIAL LAMP*** | |
| V-1 | 12BE6; Converter | 090-900040 |
| V-2 | 12BA6; IF Amplifier and BFO | 090-900039 |
| V-3 | 12AV6; Detector and Audio Amplifier | 090-901187 |
| V-4 | 50C5; Audio Output | 090-900541 |
| V-5 | 35W4; Rectifier | 090-900384 |
| LM-1 | Lamp, Dial Type #47 | 039-100004 |
| | ***MISCELLANEOUS*** | |
| Back, Cabinet | | 032-400754 |
| Cabinet, S-38E | | 066-401754 |
| Cabinet, S-38EB | | 066-102175 |
| Cabinet, S-38EM | | 066-102176 |
| Cover, Cabinet Bottom | | 032-300501 |
| Dial Cord (Specify Length) | | 038-100026 |
| Foot, Mtg. | | 016-200983 |
| Glass, Dial Window | | 022-200570 |
| Knob, Band Selector (S-38E) | | 015-201259 |
| Knob, Band-Spread, Off-Volume, or Main Tuning (S-38E) | | 015-201258 |
| Knob, Band Selector (S-38EB, EM) | | 015-201280 |
| Knob, Band-Spread; Off-Volume, or Main Tuning (S-38EB, EM) | | 015-201281 |
| Line Cord and Plug | | 087-100078 |
| Line Cord Lock (Male Section) | | 076-100397-01 |
| Line Cord Lock (Female Section) | | 076-100397-02 |
| Pointer, Band-Spread (S-38E) | | 082-200350 |
| Pointer, Band-Spread (S-38EB, EM) | | 082-200386 |
| Pointer, Main Tuning (S-38EB, EM) | | 082-200385 |
| Pointer, Main Tuning (S-38E) | | 082-200349 |
| Speaker, 5" PM; 3. 2 ohm v. c. | | 085-300030 |

# Hallicrafters S38-Size Radios

by John Hruza, KBØOKU
2521 S Holly St,
Denver CO 80222
303-758-4377, jhruza@earthlink.net

Hallicrafters' big selling point was more bang for the buck. Their equipment was well designed, well built, and had plenty of features for their price range. They could keep prices down by making maximum use of standard off-the-shelf parts, common circuits, and mass-production methods.

Among the parts they standardized were their cabinets. This article will take a look at the various pieces of equipment that used cabinets similar to the one that first came out with the S-38 receiver and SP-44 panadapter in 1946. All these cabinets were about 13-1/2" wide, 7-1/4" high and between 7" and 9" deep. (I have examples of all these unless marked with an asterisk.)

Original cabinet, black unless noted:

**S-38** shortwave receiver, 1946, 2 half-round dials
**SP-44** Skyrider Panoramic panadapter, 1946
**S-38A** shortwave receiver, 1946-47, 2 half-round dials
**HT-17** HF CW transmitter, 1947, slide-rule dial
**HT-18** HF NBFM exciter, 1947-49, slide-rule dial
**S-38B** shortwave receiver, 1947-53, 2 half-round dials
**S-53** communications receiver, 1948-53, slide-rule dial & hinged cover
**SR-75** HF transceiver, 1950-51, 2 half-round dials (*)
**S-53A** communications receiver, 1950-58, slide-rule dial & hinged cover
**S-81** Civic Patrol VHF-HI FM receiver, 1951-53, round dial
**S-82** Civic Patrol VHF-LO FM receiver, 1951-53, round dial (*)
**5R-10** shortwave receiver, 1951-53, slide-rule dial
**5R-100** shortwave receiver, 1951-53, slide-rule dial, gray (*)
**5R-10A** shortwave receiver, slide-rule dial
**5R-100A** shortwave receiver, slide-rule dial, gray (*)
**S-38C** shortwave receiver, 1953-55, 2 half-round dials, gray
**S-38D** shortwave receiver, 1955-57, slide-rule dial, gray
**S-94** Civic Patrol VHF-LO FM receiver, 1955-62, round dial, gray
**S-95** Civic Patrol VHF-HI FM receiver, 1955-62, round dial, gray
**S-102** 2m am receiver, 1956-57, round dial
**S-106** 6m am receiver, 1956-57, round dial
**SX-104** VHF-LO AM receiver, 1957-58, slide-rule dial
**SX-105** VHF-HI AM receiver, 1957-58, slide-rule dial (*)
**S-38E** shortwave receiver, 1957-61, slide-rule dial, sloping panel, gray

The S-38 was the first Hallicrafters receiver to break with the idea that bigger is better. It was the smallest receiver made by the company up to that time, and it covered .54-32 Mc in 4 bands using 6 tubes. The last few S-38s used the 5-tube .54-31Mc S-38A chassis, as did the S-38B, S-38C and S-38D. The S-38E was of a similar electrical design but used miniature tubes. There were 2 different color cabinets available in addition to the standard gray. The S-38EB is beige and the S-38EM is mahogany. The 5R10, 5R10A, 5R100 and 5R100A are similar to the S-38D except for their black color and lack of the Speaker/Phones and BFO/AM switches.



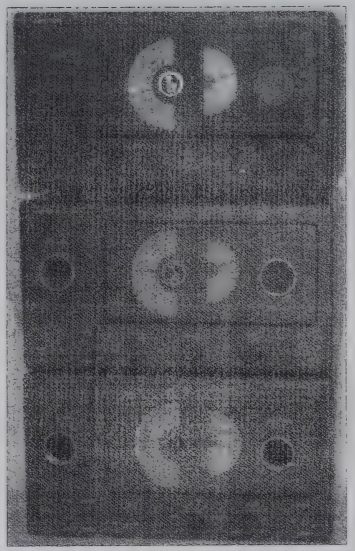


**Figure 1: Top to bottom are an early crackle-finish S-38, and late production smooth-finish S-38 and S38A.**

The SR-75 is considered by some to be the first true amateur transceiver. It is basically an S-38B with an 80-10 meter (including 11 meters) CW transmitter added. In addition to the receiver's 5 tubes, the unit used a 12BA6 crystal oscillator. The receiver's 50L6 audio output tube acted as the 10 watt final using plug-in coils. Two D cells were needed for the keying relay.

The SP-44 was a panoramic adapter using 10 tubes including a 2AP1 2-inch CRT. It could be used with any receiver with a 455 Kc IF and could display signals up to 100Kc on either side of the center frequency. It could also be used to monitor modulation, distortion, carrier shift and other characteristics of a transmitter signal. The Panoramic Radio PCA-2 T-200 was a unit identical to the SP-44, except for knobs, paint, and panel markings.

The first transmitter to use this cabinet was the HT-17, covering the 80-10

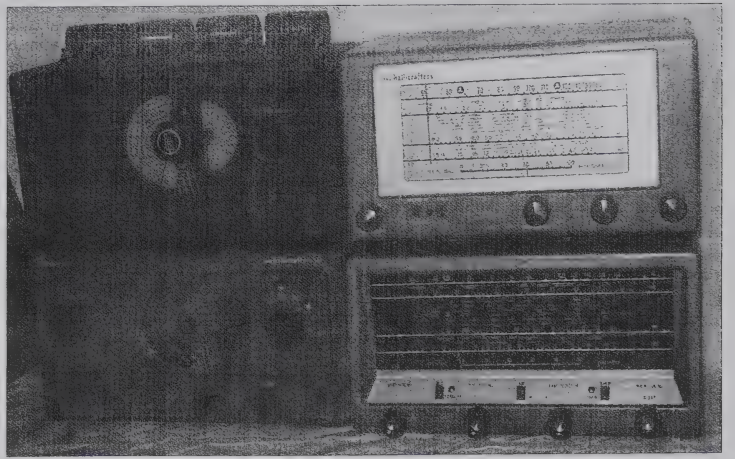


**Figure 2: On the left side is an S-38B with SR-75, a transceiver based on the S-38B.Its coils are on top of the cabinet. Below is an S-38C. On the right side are the S-38D and S-38E.**

**Figure 3: Here are several monitor receivers based on the S-38 cabinet design. The top row has the S-81, 152-173 mc "Civic Patrol" model. The middle row shows the S-94 30-50 mc and S-95 152-173 mc examples. In the bottom row an S-102 2-meter receiver is on the left, and an S-106 6-meter version is on the right.**

meter amateur bands with 5 plug-in final coils. It produced 12-25 watts CW depending on the band, using a 6V6 crystal oscillator and an 807 final. It came with a tuning indicator pilot light, which could be replaced with the optional SM-17 S-meter. The second transmitter was the 4-watt HT-18 that used 7 tubes, including a 6BA6 VFO/crystal oscillator and a 6L6 final. It covered the amateur frequencies from 3.5 to 29.7 Mc in 7 bands in CW, AM or NBFM modes.

The S-53 and S-53A were a significant improvement over the S-38 series of receivers. They used a mix of 8 miniature and GT tubes to cover .55-32 and 48-55 Mc (.54-31 and 48-54.5 Mc in the A model) in 5 bands. Based on their sensitivity and selectivity, I consider the S-38s to be shortwave receivers with BFOs, but the S-53 and S-53A are true communications receivers.

The S-81 and S-82, 152-173 and 30-50 Mc respectively, were the company's first single-band FM monitor receivers, and used 6 tubes. They were replaced by the S-95 and S-94 respectively, which added 2 tubes and changed some of the GT tubes to miniature types. The final series of monitor receivers in this cabinet are the 8-tube AM mode SX-104 and SX-105, which added the option of crystal-controlled



**Figure 4: Here are some more familiar Hallicrafters monitor receivers. The top row holds an S-104 30-50 mc receiver, and the middle row has an S-94 30-50 mc receiver, and an S-95 152-173 mc receiver. In the bottom row from the left is the 2-meter S-102 and the 6-meter S-106.**

single frequency operation. The other 2 AM radios in this series are the S-102 and S-106, 143-149 and 50-54 Mc respectively, each using 7 tubes. All these receivers used ratio detectors and had selenium rectifiers.

In 1958 Hallicrafters introduced a new cabinet, of similar size and shape, with the S-107. The main difference was a front panel set inside the front edges of the cabinet shell, replacing the older style panel that wrapped around the edges.

**Restyled cabinet, gray:**

**S-107** communications receiver, 1958-62, slide-rule dial

**CB-1** Littlefone 1-channel CB transceiver, 1959 (*)

**CB-2** Littlefone 4-channel CB transceiver, 1960 (*)

**HT-40** HF CW transmitter, 1961-63

**SX-140** amateur band receiver, 1961-64, slide-rule dial

**CRX-4** Civic Patrol VHF-LO FM receiver, round dial, 1964 (*)

**CRX-5** Civic Patrol VHF-HI FM receiver, round dial, 1964 (*)

**R-48** 5"x7" PM speaker, 1965-69

**R-48A** 5"x7" PM speaker, 1970-72

The 8-tube S-107 covers .54-1.63, 2.5-31 and 48-54.5 Mc in 5 bands and is basically an upgraded S-53A. The SX-140 is the only multiple amateur band receiver in this size cabinet, covering the 80-6 meter bands. It is also unique among the receivers discussed here in


**Figure 5: Here is an HT-17 I found with the original box and 4 box sets of additional band coils. This little rig was produced from 1947 to 1950 and was CW only. It used a 6V6 tritet oscillator and an 807 PA and could produce about 10 watts of carrier. It had an internal power supply using a type 5U4 rectifier.**

that it has a crystal filter, S-meter, crystal calibrator and front panel antenna trimmer and requires an external speaker such as the R-48. This is a lot of features for an inexpensive 5-tube receiver. It was available as a kit as well as assembled.

The 11-tube CB-1 could transmit and receive on any 1 of the 23 original CB channels depending on the installed crystal. It featured a magic eye modulation monitor. It was rapidly replaced by the 7-tube, 4-channel CB-2, the receiver portion of which could operate crystal controlled or tunable. The CB-2 also included a 3 way power supply: 6 or 12 VDC or 120 VAC.

The HT-40 transmitter was designed to be used with the S-107 or, preferably, with the SX-140. This is a novice unit like the HT-17, but its output was 75 watts on CW, and somewhat less on AM. It covers the 80-6 meter amateur bands under crystal control but has provision for an external VFO. It has only 5 tubes including a 6DQ5 sweep tube final and has a silicon diode rectifier and voltage doubler. Like the SX-140, it was available in kit form or assembled.

The 7-tube CRX-4 and 8-tube CRX-5 Civic Patrol, covering 30-50 Mc and 152-173 Mc respectively, are the last tube type single band FM monitor receivers to be built by the company. They are similar in performance to their S-94 and S-95 predecessors.

Most of the equipment described here can be bought for reasonable prices at Hamfests, estate sales or other such venues. They are easier to work on than their more complex cousins. A beginning Hallicrafters collector might start with some of these radios. A good Novice station dating from 1947 could be assembled consisting of an S-38A or B with an HT-17. A 1948-49 station would need an S-53 with an HT-18. Or an SX-140 with an R-48, an HT-40 and perhaps an S-107 for general coverage would make a good 1961-64 station. Any of these would do a fine job in the role they were designed for.



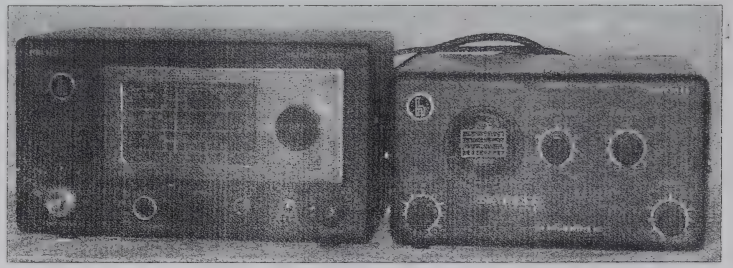


**Figure 6: On the left is an HT-18 VFO/exciter. These were produced from 1947 to 1949 and covered 80 to 10 meters. They produced CW and NBFM emissions from a 6BA6 crystal or VFO oscillator, and a 6L6 multiplier and PA. They could generate about 5 watts of carrier. Two other 6BA6's served as the speech amplifier and FM reactance modulator. It had an internal regulated power supply, and a link-coupled output network. On the right is the SP-44 Skyrider Panadaptor. Note the slightly different case, originally produced by Panoramic Radio.**

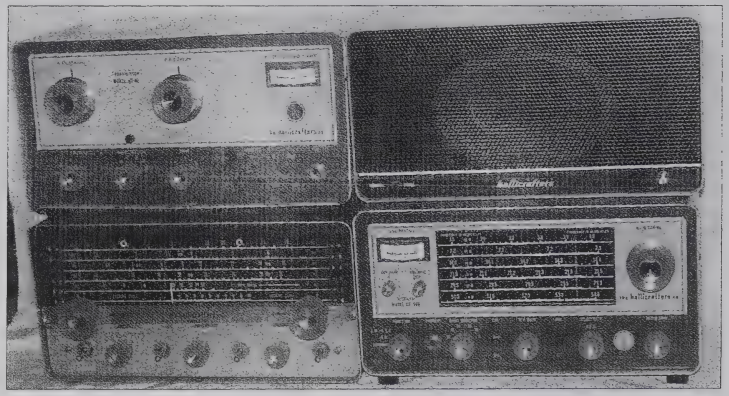


**Figure 7: If we were still in 1961, this could be your Ham station. On the top right is the HT-40, which was produced from 1960 to 1964. It used a 6DQ5 television horizontal sweep tube to produce about 75W CW carrier, and about 30W peak for AM. It used a controlled carrier AM screen modulator and had a 50 ohm pi-network output. Next to the HT-40 is an R48A speaker for the SX-140. On the bottom row is an S-107 on the left, and on the right is an SX-140. The SX-140 included 6-meter coverage, and had an unusual regenerative IF for developing IF selectivity. The S-107 could be purchased for less than a hundred dollars and also covered 6 meters, but it had no IF filter.**

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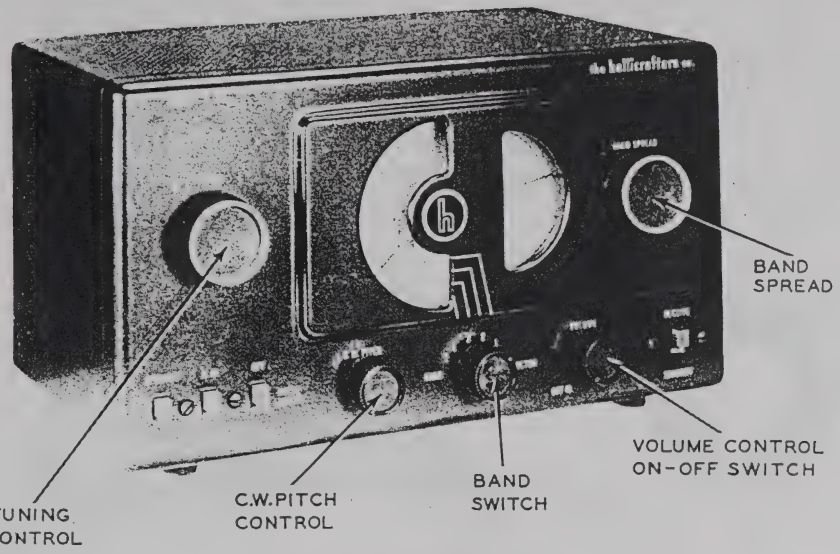



HALLICRAFTERS MODEL S-38

| | |
|---|---|
| TRADE NAME | Hallicrafters Model S-38 |
| MANUFACTURER | Hallicrafters Co., 2611 S. Indiana Ave., Chicago, Illinois |
| TYPE SET | AC - DC Superheterodyne - 4 Band Communications Receiver |
| TUBES (SIX) | Types 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 12SQ7GT BFO-ANL, 35L6GT Power Output, 35Z5GT Rectifier. |
| POWER SUPPLY | 105-125 Volts AC-DC Rating .245 Amps. @ 117 Volts AC |
| TUNING RANGE | Band #1- 540-1650KC Band #2- 1650KC-5.0MC Band #3 5.0MC-14.5MC Band #4- 13.5MC-32.0MC |

ALIGNMENT INSTRUCTIONS

| DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| NONE | High side to stator plates of rear section of tuning gang. Low side to "G" on antenna strip. | 455KC | "1" | 1000KC | Across voice coil | A1,A2, A3,A4. | Adjust for maximum output. Repeat adjustment. |
| " | " | " | " | " | " | BFO Slug | Turn off 400~ modulation on signal generator. Set CW/AM switch at CW. Remove pitch control knob and adjust slotted screw shaft for zero beat. |
| 400Ω carbon res. | High side to "A1" on antenna strip. Low side to "G" on on antenna strip. | 30MC | "4" | 30MC | " | A5,A6 | Adjust for maximum output. Rock gang slightly when adjusting A5. |
| " | " | 14MC | "3" | 14MC | " | A7,A8 | Adjust for maximum output. Rock gang slightly when adjusting A8. |
| " | " | 5MC | "2" | 5MC | " | A9 | Adjust for maximum output. |
| " | " | 1.8MC | " | 1.8MC | " | A10 | Adjust for maximum output and repeat A9 at 5MC. |
| " | " | 5MC | " | 5MC | " | A11 | Adjust for maximum output. Rock gang slightly. |
| " | " | 1500KC | "1" | 1500KC | " | A12 | Adjust for maximum output. |
| " | " | 600KC | " | 600KC | " | A13 | Adjust for maximum output and repeat A12 at 1500KC. |
| " | " | 1500KC | " | 1500KC | " | A14 | Adjust for maximum output. Rock Gang Slightly. |

Set receiver controls as follows: "Speaker-Phones" switch at speaker; Volume control at full clockwise (maximum); CW/AM switch at "AM" (except for BFO adjustment); noise limiter switch at "off"; bandspread tuning at "0" (min. cap.); "standby-receive" switch at receive. Adjust output of signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

**HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana**

# PARTS LIST AND DESCRIPTIONS

## TUBES

| ITEM No. | USE | REPLACEMENT DATA: HALLICRAFTERS PART No. | REPLACEMENT DATA: STANDARD REPLACEMENT | RMA BASE TYPE | INSTALLATION NOTES |
|---|---|---|---|---|---|
| 1 | Converter | 12SA7GT | 12SA7GT | 6A | |
| 2 | IF Amp. | 12SK7GT | 12SK7GT | 6K | |
| 3 | Det., AVC, 1st AF | 12SQ7GT | 12SQ7GT | 6Q | |
| 4 | BFO-ANL | 12SQ7GT | 12SQ7GT | 6Q | |
| 5 | Power Output | 45Z5GT | 45Z5GT | 7AC | |
| 6 | Rectifier | 5Y3GT | 5Y3GT | 4B | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING: CAP | RATING: VOLT | REPLACEMENT DATA: HALLICRAFTERS PART No. | MALLORY PART No. | SOLAR PART No. | SPRAGUE PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | IDENTIFICATION CODES AND INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|---|
| 7(A) | 40 | 150 | 45B091 | TC48 | BSB-40-150 | TA-150 | | EZ43150 | Filter - Red |
| (B) | 30 | 150 | | SR35 | 20-30 | | | | " - Yellow |
| (C) | 30 | 150 | | | M-30-150 | UT-301 | | | " - " |
| (D) | 20 | 25 | | | | TA-25 | | | Cath. Bypass - Blue |
| 8 | .25 | 200 | 46AT254J | TP430 | S-4-25 | TC-2 | 484-.25 | DT4P25 | Line Isolating |
| 9 | .02 | 400 | 46AW203J | TP423 | S-4-02 | TC-12 | 484-.02 | DT4S2 | Line Bypass |
| 10 | .02 | 600 | 46AY203J | TP412 | S-6-02 | TC-12 | 684-.02 | DT6S2 | 350 Plate Bypass |
| 11 | .01 | 400 | 46AW102J | TP421 | S-4-01 | TC-11 | 484-.01 | DT4S1 | Audio Coupling |
| 12 | .005 | 400 | 46AW502J | TP408 | S-4-005 | TC-25 | 484-.005 | DT4D5 | " " |
| 13 | .01 | 400 | 46AW102J | TP421 | S-4-01 | TC-11 | 484-.01 | DT4S1 | BFO Plate bypass |
| 14 | .05 | 200 | 46AU503J | TP426 | S-4-05 | TC-15 | 484-.05 | DT4S5 | IF Cath. Bypass |
| 15 | .25 | 200 | 46AT254J | TP430 | S-4-25 | TC-2 | 484-.25 | DT4P25 | Screen bypass |
| 16 | .02 | 400 | 46AW203J | TP423 | S-4-02 | TC-12 | 484-.02 | DT4S2 | AVC Filter |
| 17 | .01 | 600 | 46AY103J | TP410 | S-6-01 | TC-11 | 684-.01 | DT6S1 | Ant. Coupling |
| 18 | .05 | 200 | 46AU503J | TP426 | S-4-05 | TC-15 | 484-.05 | DT4S5 | RF Bypass Pwr. Supp. |
| 19 | 220 | 500 | CM20A221K | MC240 | MO.5-325 | 1FM-325 | 1468-.00025 | 5W5T25 | RF Bypass Diode |
| 20 | 220 | 500 | CM20A221K | MC240 | MO.5-325 | 1FM-325 | 1468-.00025 | 5W5T25 | BFO Grid Cap. |
| 21 | 470 | 500 | CM20A471K | MC245 | MO.5-35 | 1FM-35 | 1468-.0005 | 5W5T5 | BFO Fixed Trimmer |
| 22 | 2700 | 500 | CM30A272J | MC460 | MW.5-225 | | 1467-.0025 | 1W5D25 | RF Grid Cap. |
| 23 | 220 | 500 | CM20A221K | MC240 | MO.5-325 | 1FM-325 | 1468-.00025 | 5W5T25 | Osc. Grid Cap. |
| 24 | 2700 | 500 | CM30A271J | MC460 | MW.5-225 | | 1467-.0025 | 1W5D25 | Fixed Padder |
| 25 | 510 | 500 | | MC245 | MO.5-35 | 1FM-35 | 1468-.0005 | 5W5T5 | RF Bypass Rect. |
| 26 | 220 | 500 | CM20A221K | MC240 | MO.5-325 | 1FM-325 | 1468-.00025 | 5W5T25 | Audio Plate Bypass |
| 27 | 1200 | 500 | | MC255 | MO.5-21 | 1FM-21 | 1468-.001 | 1W5D1 | Fixed Trimmer |

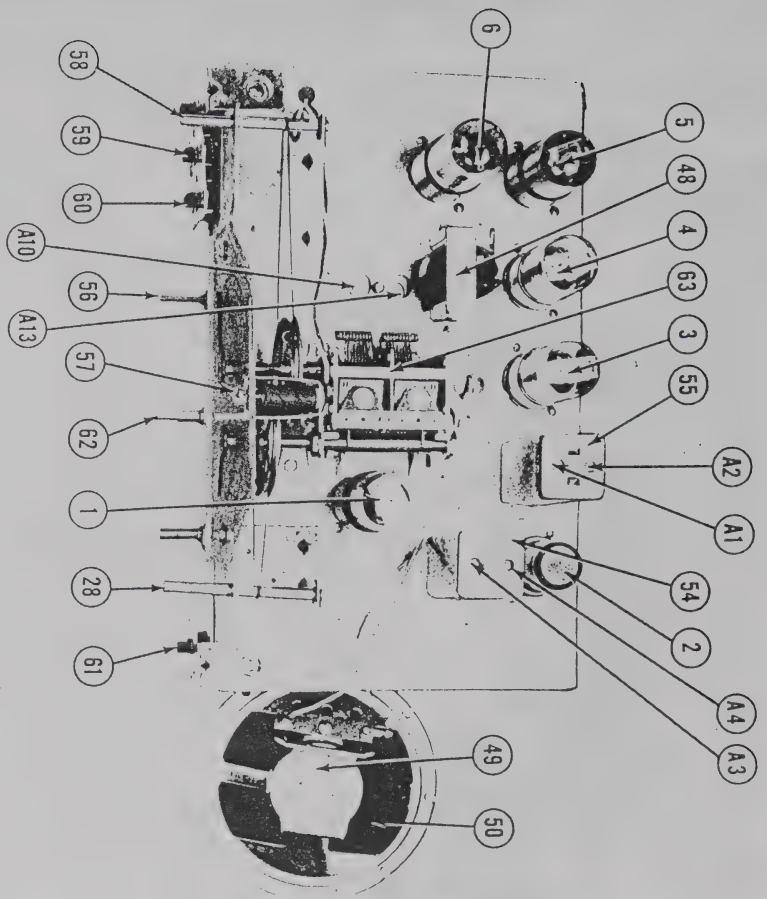
## CONTROLS

| ITEM No. | RATING: RESISTANCE | RATING: WATTS | REPLACEMENT DATA: HALLICRAFTERS PART No. | MALLORY PART No. | IRC PART No. | CLAROSTAT PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|
| 28(A) | 500KΩ | 1 | 45B094 | SR46 | D15-133 | RM-60-2 | Volume Control |
| (B) | Shaft | | Not Req. | Not Req. | " | RS-2 | attach to 28A per instructions. |
| (C) | Switch | | " " | M28 | 41 | SW-A | " " " " " |

## RESISTORS

| ITEM No. | RATING: RESISTANCE | RATING: WATTS | REPLACEMENT DATA: HALLICRAFTERS PART No. | IRC PART No. | IDENTIFICATION CODES |
|---|---|---|---|---|---|
| 29 | 10KΩ | ½ | | | |
| 30 | 47KΩ | ½ | | | Yl.-Vl.-Yl. Converter Grid |
| 31 | 47Ω | ½ | | | Yl.-Vl.-blk. Osc. Series Grid |
| 32 | 22KΩ | ½ | | | Red-Red-Or. Osc. Grid |
| 33 | 2.2 MEG. | ½ | | | Red-Red-Grn. AVC Network |
| 34 | 47KΩ | ½ | | | Yl.-Vl.-Or. Diode Load |
| 35 | 470Ω | ½ | | | Yl. Vl.-Br. CW AVC Shorting |
| 36 | 47KΩ | ½ | | | Yl.-Vl.-Or. BFO Grid |
| 37 | 10 MEG. | ½ | | | Br.-Blk.-blue 1st AF Grid |
| 38 | 22KΩ | ½ | | | Red-Red-Yl. 1st AF Plate Load |
| 39 | 47KΩ | ½ | | | Yl.-Vl.-Yl. Output Grid |
| 40 | 15Ω | 3 | | | Br.-Grn.-Br. Output Cathode |
| 41 | 10KΩ | ½ | | | Br.-Blk.-Red Filter |
| 42 | 68Ω | 1 | | | blue-Gray-Br. " |

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS (CONTINUED)

| | | | | | |
|---|---|---|---|---|---|
| 43 | 22Ω | ½ | RC20AE220M | BW-½-22 | red-red-blk. Surge Limiter |
| 44 | 33Ω | ½ | RC20AE330M | BW-½-330 | Or.-Or.-Br. Pilot Light Shunt |
| 45 | 15Ω | ½ | RC20AE150M | BW-½-15 | Br.-Grn.-blk. Headphone Shunt |
| 46 | 390Ω | ½ | RC20AE391K | BW-½-390 | Or.-White-Br. IF Cathode |
| 47 | 470Ω | ½ | RC20AE471K | BW-470 | Yl.-Vl.-Br. BFO Plate Load |

## TRANSFORMER (OUTPUT)

| ITEM No. | RATING | | | | REPLACEMENT DATA | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | IMPEDANCE | | DC RES. | | HALLI-CRAFTERS PART No. | STANCOR PART No. | THORDAR'N PART No. | | |
| | PRI. | SEC. | PRI. | SEC. | | | | | |
| 48 | 4500Ω | 3.2Ω | 17Ω | .6Ω | 38A075 | A-3673 | T-12S421 | | 1Drill new mounting holes. |

## SPEAKER

| ITEM No. | RATINGS | | REPLACEMENT DATA | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|
| | | | HALLICRAFTERS PART No. | JENSEN PART No. | | |
| 49 | FIELD | VC IMP. | 85C035 | SP-105 | | |
| | PM | 3.2Ω | | | | |
| | CONE DIA. | VC DIA. | | | | |
| 50 | 4-9/16" | 5/8" | NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT. | | | |

## R F COILS

| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|
| | | PRI. | SEC. | HALLI-CRAFTERS PART No. | MEISSNER PART No. | |
| 51(A) | 2nd Ant. Coil | 2Ω | 4.5Ω | 51C821* | | *Wound on same coil form with bands 2,3. " " " " " " " 1,3. " " " " " " " 1,2. |
| 51(b) | " 2 " " | 1Ω | 1Ω | | | |
| 51(C) | " 3 " " | 1Ω | .1Ω | | | |
| 52 | " 4 " " | .5Ω | .2Ω | 51C818 | | **Wound on coil form with bands 2,3,4. " " " " " " 1,3,4. " " " " " " 1,2,4. " " " " " " 1,2,3. |
| 53(A) | " Osc. " | | 2.8Ω | 51C822** | | |
| 53(B) | " 2 " " | | 1Ω | | | |
| 53(C) | " 3 " " | | .2Ω | | | |
| 53(D) | " 4 " " | .1Ω | .1Ω | | | |
| 54 | Input IF | 27Ω | 28.5Ω | 50C183 | 13-3655 | |
| 55 | Output IF | 24.5Ω | 24.5Ω | 50C184 | 1d-3660 | |
| 56 | BFO Osc. Coil | | 0Ω | 51C831 | | |

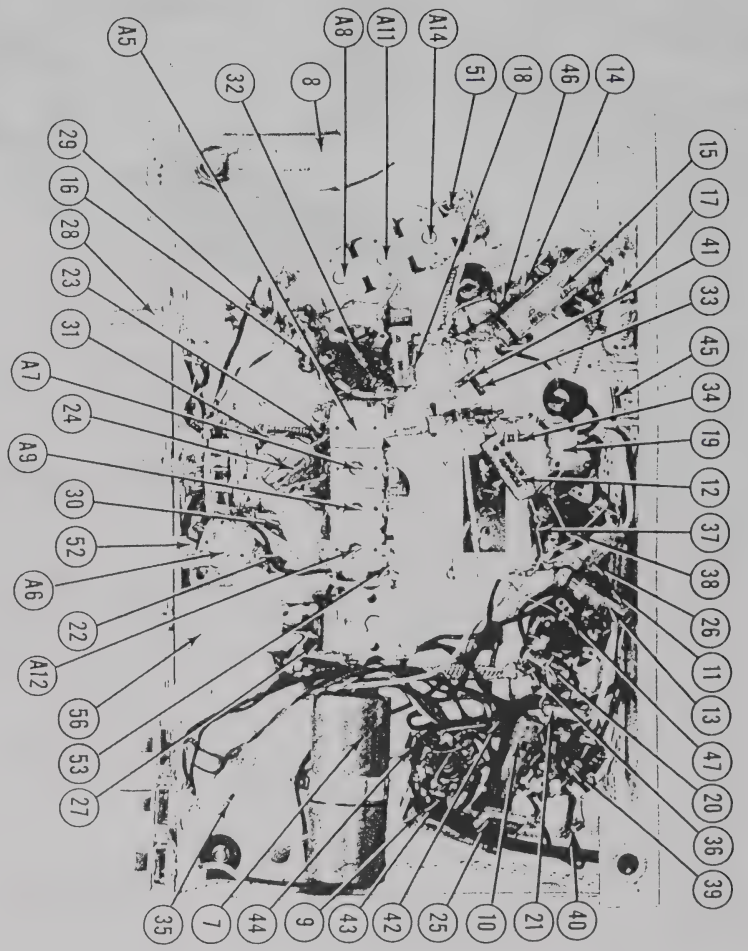
## DIAL LIGHT

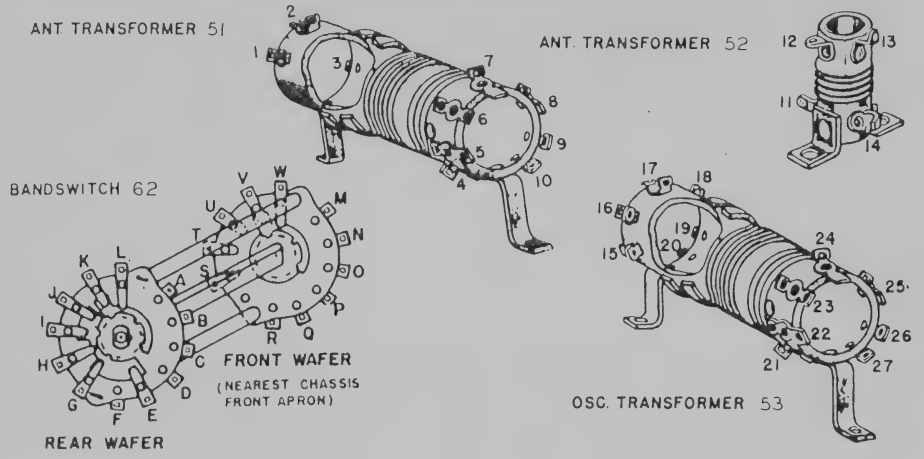
| ITEM No. | BASE TYPE | VOLTS | AMPS. | BEAD COLOR | REPLACEMENT DATA | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|
| | | | | | HALLI-CRAFTERS PART No. | | |
| 57 | bayonet | 6-8 | 0.1A | brown | 38A004 | | Type 47 |

## MISCELLANEOUS

| ITEM No. | PART NAME | HALLI-CRAFTERS PART No. | NOTES |
|---|---|---|---|
| 58 | Switch | 60A243 | "SPEAKER-PHONES" SPDT |
| 59 | " | 60A245 | "AM-CW" SPDT |
| 60 | " | 60A244 | "NOISE LIMITER" SPST |
| 61 | " | 60A244 | "RECEIVE STANDBY" SPST |
| 62 | " | 60A240 | 4 Position Bandswitch |
| 63 | Tuning Cap. | 48C132 | 2 Gang Main & Band Spread Var. Cap. |
| | Trimmer | 44B129 | A5,A7,A9,A12 Osc. Adjustments |
| | " | 44B129 | A6,A11,A14 Ant. Adjustments |
| 66 | " | 44A049 | Antenna Trimmer |
| | " | 44 B42 | A10,A15 Osc. Padders |
| | Knob | 15A049 | Volume and Band Switch |
| | " | 15A05? | C.W. Pitch Control |
| | " | 15A047 | Tuning and Bandspread Controls |
| | Calibrated Dial | 66A257 | |
| | Dial Window | 62A157 | Glass |

## CHASSIS—BOTTOM VIEW

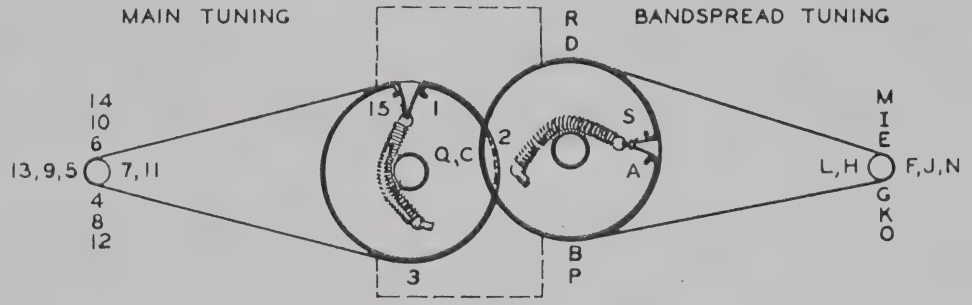





# COIL CONNECTIONS

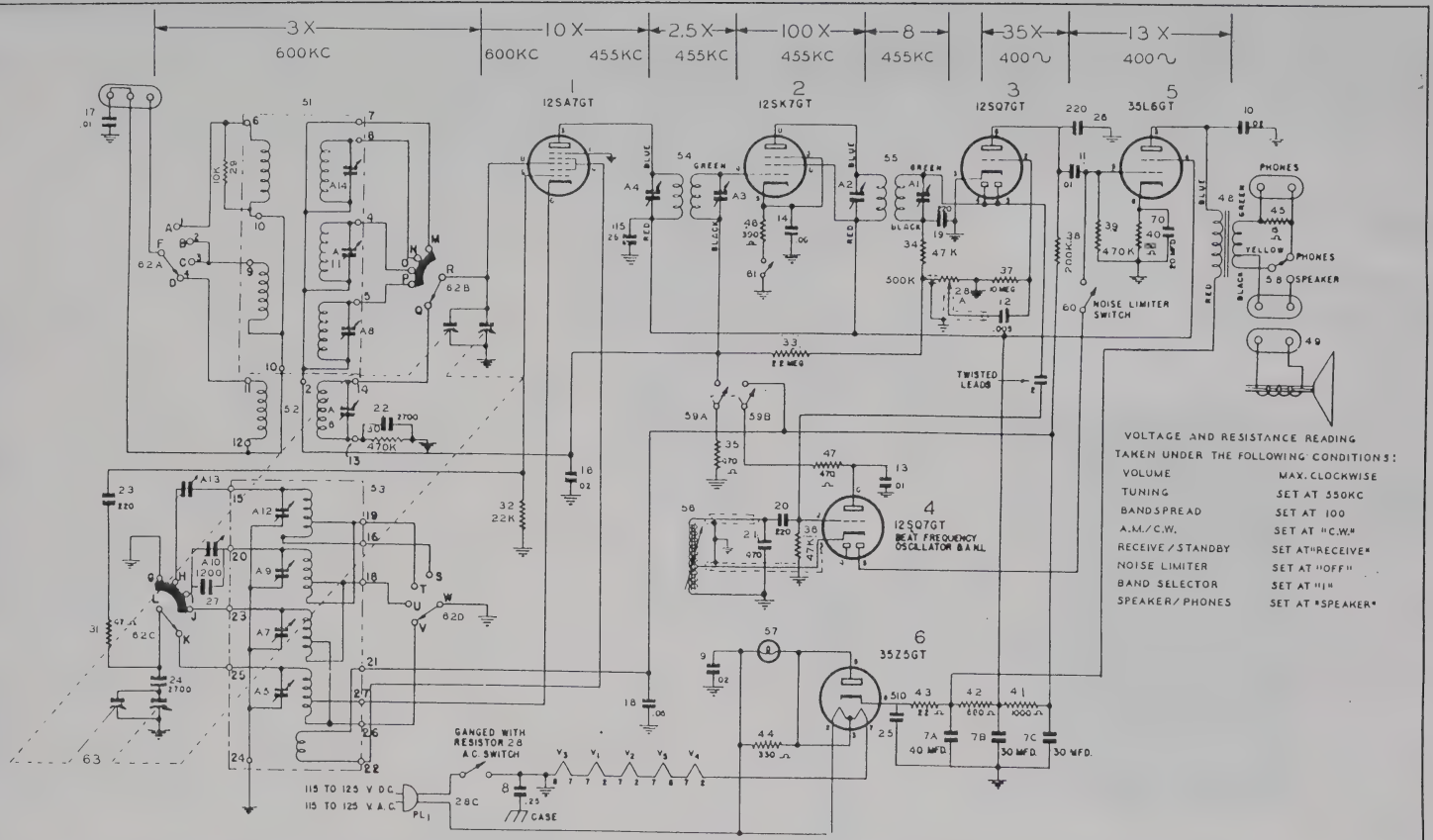
To restring the main tuning dial cord, cut a 14" length of 30 lb. test dial cord and tie one end of the tension spring of the main tuning capacitor drive pulley at position "1" on the diagram. Following the numbers 1 through 15, wind the cord on the pulley and knob drive shaft. At position "15," stretch the tension spring and tie the cord securely. Cut off the excess cord. Note that two complete turns are wound on the knob drive shaft.

To restring the bandspread tuning dial cord, cut a 16" length of dial cord and follow the procedure as explained above, except start at position "A" on the diagram and proceed through position "S". Note that the knob drive shaft has two complete turns.




TUNING CAPACITOR FULLY CLOSED (BOTH SECTIONS).

# DIAL STRINGING PROCEDURE




VOLTAGE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 12SA7GT | 0V. | 25.5VAC | 100V.DC | 90V.DC | -5.5V.DC | 0V. | 12.5VAC | 0V. |
| 2 | 12SK7GT | 0V. | 37.5VAC | 3.5V.DC | 0V. | 3.5V.DC | 100V.DC | 25.5VAC | 100V.DC |
| 3 | 12SQ7GT | 0V. | -7V.DC | 0V. | -.47V.DC | -.47V.DC | 57V.DC | 12.5VAC | 0V |
| 4 | 12SQ7GT | 0V. | 0V. | 0V. | 0V. | 0V. | 100V.DC | 37.5VAC | 49.5VAC |
| 5 | 35L6GT | 0V. | 85V.AC | 109V.DC | 100V.DC | 0V. | 0V. | 49.5VAC | 6.1V.DC |
| 6 | 35Z5GT | 116V.DC | 117V.AC | 112V.AC | 116V.DC | 112V.AC | 0V. | 85V.AC | 117V.DC |

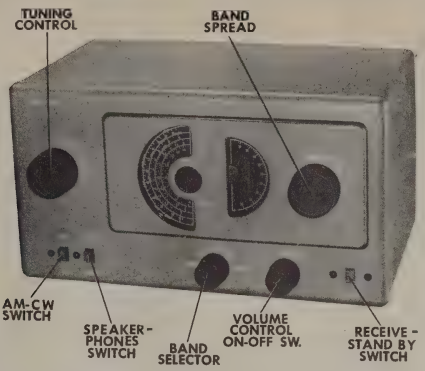
RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 12SA7GT | 0Ω | 27Ω | 125KΩ | 125KΩ | 20KΩ | 4Ω | 13.5Ω | 450Ω |
| 2 | 12SK7GT | 0Ω | 39Ω | 350Ω | 450Ω | 350Ω | 125KΩ | 27Ω | 125KΩ |
| 3 | 12SQ7GT | 0Ω | 7.5MEG | 0Ω | 420KΩ | 420KΩ | 450KΩ | 13.5Ω | 0Ω |
| 4 | 12SQ7GT | 0Ω | .2Ω | 2Ω | INF | INF | 125KΩ | 39Ω | 52Ω |
| 5 | 35L6GT | 0Ω | 82Ω | 125KΩ | 125KΩ | 425KΩ | INF | 52Ω | 145Ω |
| 6 | 35Z5GT | 125KΩ | 105Ω | 105Ω | 125KΩ | 105Ω | 0Ω | 82Ω | 125KΩ |

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HALLICRAFTERS
MODEL S-38C (Run 2)




| | |
|---|---|
| TRADE NAME | Hallicrafters Model S-38C (Run 2) |
| MANUFACTURER | Hallicrafters Co., 4401 W. 5th. Ave., Chicago 24, Ill. |
| TYPE SET | AC-DC Operated Multi-Band AM Communications Superheterodyne |
| TUBES (Five) | Types 12SA7 Conv., 12SG7 IF Amp., 12SQ7 Det.-AVC-AF Amp., 50L6GT Audio Output, 35Z5GT Rectifier |
| POWER SUPPLY | 105-125 Volts AC-DC RATING .23 Amp. @ 117 Volts AC |
| TUNING RANGE— | Band #1 (.54-1.7MC), Band #2 (1.7-5MC), Band #3 (5-14MC), Band #4 (14-32MC) |

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Set AM-CW switch to AM (except for BFO adjustment), SPEAKER-PHONES switch to SPEAKER, RECEIVE-STANDBY switch at RECEIVE and BANDSPREAD control at 0.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Turn bandspread capacitor plates fully open and set bandspread pointer straight up, to the zero position on bandspread dial.
Turn main tuning gang fully open and set pointer straight up.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 1. | .01MFD | High side to stator Plates of front section of tuning gang. Low side to chassis. | 455 KC (400~ Mod) | 1 | 1.0MC | Across voice coil | A1, A2, A3, A4 | Adjust for maximum output. |
| 2. | " | " | 455 KC (Unmod.) | " | " | " | A5 | Vary position of wire "gimmick" at pins 4 and 8 of V2 for maximum beat. (Set AM-CW switch to CW for this step only). Adjust A5 (gimmick) only if weak beat note indicates need. |
| 3. | RTMA Fig. 1 | High side thru dummy to left hand antenna terminal (viewed from rear of chassis). Low side to chassis. | 30MC (400~Mod) | 4 | 30MC | " | A6, A7 | Adjust in order given for maximum output. |
| 4. | " | " | 14MC | 3 | 14MC | " | A8, A9 | " |
| 5. | " | " | 5MC | 2 | 5MC | " | A10, A11 | " |
| 6. | " | " | 1500 KC | 1 | 1.5MC | " | A12, A13 | " |
| 7. | " | " | 600 KC | 1 | .6MC | " | A14 | Adjust for maximum output. |

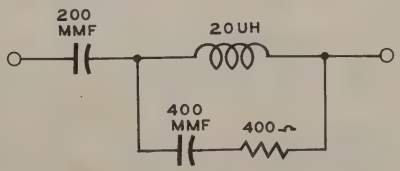



FIG. 1

# PARTS LIST AND DESCRIPTIONS

## TUBES (SYLVANIA or Equivalent)

| ITEM No. | USE | REPLACEMENT DATA: Hallicrafters PART No. | REPLACEMENT DATA: STANDARD REPLACEMENT | RMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| V1 | Converter | 90X12SA7 | 12SA7 | 8R | |
| V2 | IF Amp. -BFO | 90X12SG7 | 12SG7 | 8BK | |
| V3 | Det.-AVC-AF Amp. | 90X12SQ7 | 12SQ7 | 8Q | |
| V4 | Audio Output | 90X50L6GT | 50L6GT | 7S | |
| V5 | Rectifier | 90X35Z5GT | 35Z5GT | 6AD | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING: CAP. | RATING: VOLT | REPLACEMENT DATA: Hallicrafters PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| C1A | 60 | 150 | 45B091 | PRS1010D4A | | EZ55515C | | 3N532 | TVA-3436 | |
| B | 40 | 150 | | PRS150/40 | | | | TC49 | TVA-1413 | |
| C | 40 | 150 | | | | | | | | |
| D | 20 | 25 | | | | | | | | |
| C2 | 2700 | 500 | 47X30B272K | | | | | | | |
| C3 | 220 | 500 | 47X20B221K | 1469-00025 | | 5R5T25 | | MCB240 | MS-325 | |
| C4 | 220 | 500 | 47X20B221K | 1469-00025 | | 5R5T25 | | MCB240 | MS-325 | |
| C5 | 3000 | 500 | 47X30B302J | 1464-003 | | 1R5D3 | | MCB461 | MS-23 | |
| C6 | 2200 | 500 | 47X30B222J | | | | | | | |
| C7 | 5000 | | 47A168 | BPD-005 | DD-502 | TM5D5 | 811-005 | DC-525 | 5HK-D5 | |
| C8 | 5000 | | 47A168 | BPD-005 | DD-502 | TM5D5 | 811-005 | DC-525 | 5HK-D5 | |
| C9 | .02 | 600 | 46AY203J | P688-02 | DF-203 | PTE6S2 | | PT612 | 6TM-S2 | |
| C10 | .002 | 600 | 46AZ202F | P688-002 | D6-202 | PTE6D2 | GP2-333-202 | PT622 | 6TM-D2 | |
| C11 | .05 | 200 | 46AU503J | P288-05 | DF-503 | PJ2S5 | | PT415 | 2TM-S5 | |
| C12 | 220 | 500 | 47XZ0B221K | 1468-00025 | D6-221 | 5W5T25 | GP2K-221 | | 1FM-325 | |
| C13A | 220 | | 46A151 | SI220 | D6-221 | 5W5T25 | GP2K-221 | UC-5322 | 34C3 | |
| B | 2000 | | | BPD-002 | DD-202 | TM5D2 | 801-002 | DC-522 | | |
| C | 220 | | | SI220 | D6-221 | 5W5T25 | GP2K-221 | UC-5322 | | |
| D | 5000 | | | BPD-005 | DD-502 | TM5D5 | 811-005 | DC-525 | | |
| C14 | .01 | 600 | 46AZ103J | P688-01 | D6-103 | PTE6S1 | GP2-333-103 | PT611 | 6TM-S1 | |
| C15 | .02 | 600 | 46AY203J | P688-02 | DF-203 | PTE6S2 | | PT612 | 6TM-S2 | |
| C16 | 10000 | | 47A217 | BPD-01 | DD-103 | TM5S1 | 821-01 | DC-511 | 5HK-S1 | |
| C17 | .022 | 600 | 46BR203L6 | 689ZGXY-02 | | PJ6S2 | | PT6122 | 6TM-S22 | |
| C18 | .05 | 600 | 46AY503J | P688-05 | | PTE6S5 | | PT615 | 6TM-S5 | |

## CONTROLS

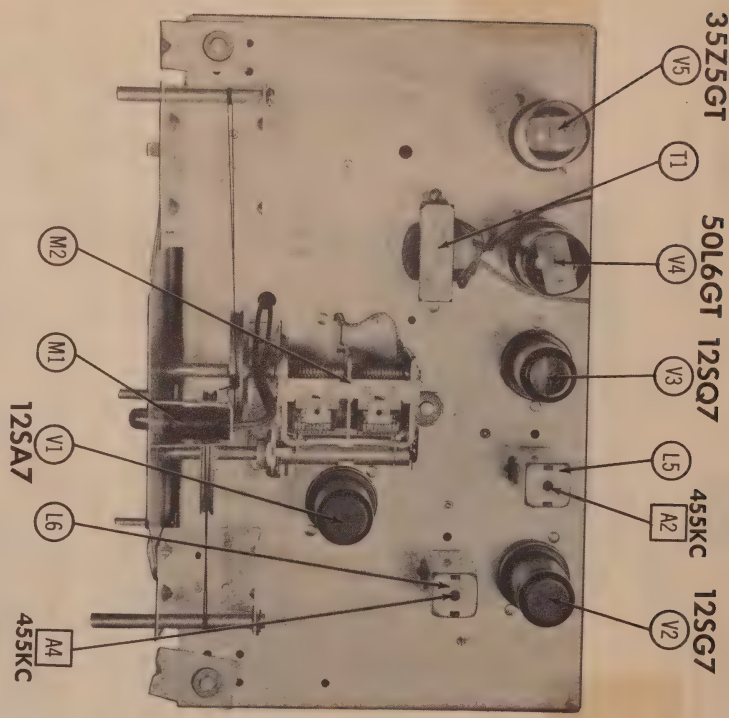
| ITEM No. | RATING: RESISTANCE | RATING: WATTS | REPLACEMENT DATA: Hallicrafters PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 2 Meg | ½ | 25B696 | QI3-139 | AG-66-Z | B-76-S | U-55 | Volume |
| B | Shaft | | Not Req. | Not Req. | RS-2 | Not Req. | Not Req. | Attach to R1A |
| C | Switch | | Not Req. | 76-1 | SWB | Not Req. | US-26 | Attach to R1A |

## RESISTORS

| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: Hallicrafters PART No. | REPLACEMENT DATA: IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R2 | 10KΩ | ½ | 23X20X103M | BTS-10K | |
| R3 | 22Ω | ½ | 23X20X220M | | |
| R4 | 15Ω | ½ | 23X20X150M | | |
| R5 | 470KΩ | ½ | 23X20X474M | BTS-470K | |
| R6 | 22KΩ | ½ | 23X20X223M | BTS-22K | |
| R7 | 22Ω2 | ½ | 23X20X220M | | |
| R8 | 2.2Meg | ½ | 23X20X225M | BTS-2.2Meg | |
| R9 | 2.2Meg | ½ | 23X20X225M | BTS-2.2Meg | |
| R10 | 470Ω | ½ | 23X20X471K | BTS-470 | |
| R11 | 270Ω | ½ | 23X20X271K | BTS-270 | |
| R12 | 330Ω | ½ | 23X20X331M | BTS-330 | |
| R13 | 47KΩ | ½ | 23X20X473M | BTS-47K | |

| ITEM No. | RATING: OHMS | RATING: WATT | REPLACEMENT DATA: PART No. | REPLACEMENT DATA: IRC PART No. | NOTES |
|---|---|---|---|---|---|
| R14 | 470KΩ | ½ | 23X20X474M | BTS-470K | |
| R15 | 10 Meg | ½ | 23X20X106M | BTS-10 Meg | |
| R16 | 220KΩ | ½ | 23X20X224M | BTS-220K | |
| R17 | 470KΩ | ½ | 23X20X474M | BTS-470K | |
| R18 | 150Ω | ½ | 23X20X151K | BTS-150 | |
| R19 | 15Ω | ½ | 23X20X150M | | |
| R20 | 22Ω | ½ | 23X20X220M | | |
| R21 | 220Ω | 1 | 23X30X221M | BTA-220 | |
| R22 | 1000Ω | ½ | 23X20X102M | BTS-1000 | |
| R23 | 15Ω | ½ | 23X20X150M | | |
| R24 | 470KΩ | ½ | 23X20X474M | BTS-470K | |

# CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | RATING | | | | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | IMPEDANCE | | DC RES. | | Hallicrafters PART No. | STANCOR PART No. | MERIT PART No. | CHICAGO PART No. | TRIAD PART No. | |
| | PRI. | SEC. | PRI. | SEC. | | | | | | |
| T1 | 2KΩ | 3.2Ω | 160Ω | 2.78Ω tap @ .81Ω | 55A127 | | | | | |

## SPEAKER

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | NOTES |
|---|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | Hallicrafters PART No. | JENSEN PART No. | QUAM PART No. | |
| SP1 | 5" | PM | 3.2Ω | 85C030 | ST-105 Mod. P5-X | 5A1 | |

## COILS (RF-IF)

| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | | NOTES |
|---|---|---|---|---|---|---|---|
| | | PRI. | SEC. | Hallicrafters PART No. | MERIT PART No. | IRC PART No. | |
| L1A | BC Ant. Coil | 28Ω | 4.2Ω | 51C821 | | | Band 1. |
| B | Sw. Ant. Coil | .8Ω | 1.1Ω | | | | Band 2; Part of L1A. |
| C | Sw. Ant. Coil Secondary | | .1Ω | | | | Band 3; Part of L1A. |
| L2 | Sw. Ant. Coil | .3Ω | .1Ω | 51B1015 | | | Band 4 |
| L3A | BC. Osc. Coil | 2.4Ω | | 51C822 | | | Band 1; Tapped at 2.2Ω. |
| B | Sw. Osc. Coil | 2.7Ω | | | | | Band 2; Tapped at 2.2Ω; Part of L3A. |
| C | Sw. Osc. Coil | 0Ω | | | | | Band 3; Part of L3A. |
| D | Sw. Osc. Coil | 0Ω | 0Ω | | | | Band 4; Part of L3A. |
| L4 | Cathode Choke | 9Ω | | 53A107 | TV-188 | | 540 Microhenries. |
| L5 | Input IF | 14.5Ω | 14Ω | 50C531 | BC-352 | | |
| L6 | Output IF | 13Ω | 13Ω | 50C532 | BC-353 | | |

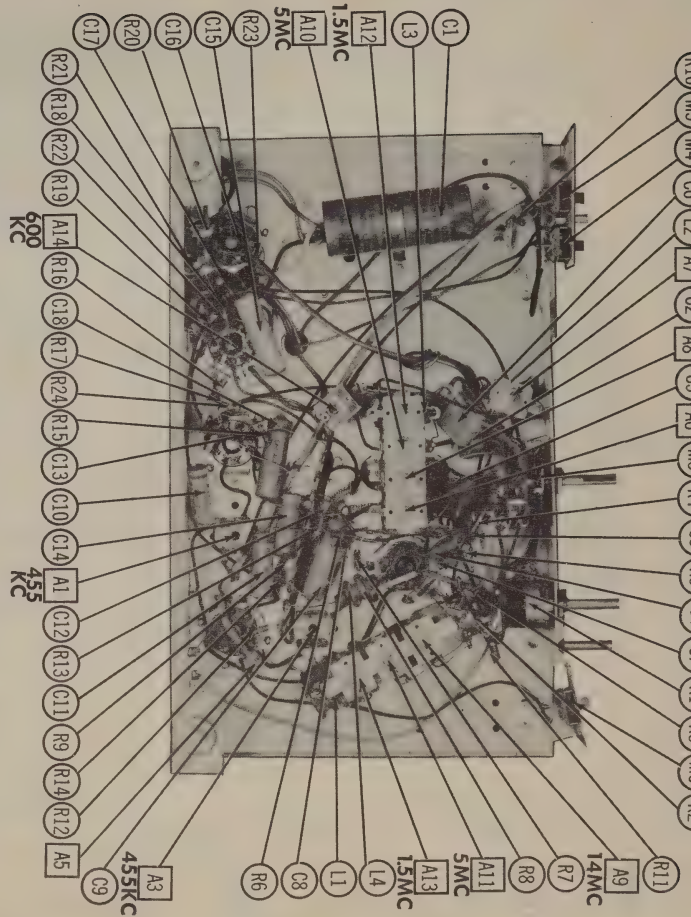
## DIAL LIGHTS

| ITEM No. | BASE TYPE | VOLTS | AMPS. | BEAD COLOR | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|---|---|
| | | | | | Hallicrafters PART No. | | |
| M1 | Bayonet | 6-8 | .15 | Brown | 39A004 | | Type No. 47. |

## MISCELLANEOUS

| ITEM No. | PART NAME | Hallicrafters PART No. | NOTES |
|---|---|---|---|
| M2 | Tuning Capacitor | 48C162-1 | 12-461MMF, 12-461MMF |
| M3 | Switch | 60C393 | Band Selector |
| M4 | Switch | 60A477 | Speaker-Phones Selector, SPDT Slide |
| M5 | Switch | 60A477 | AM-CW Selector, SPDT Slide |
| M6 | Switch | 60A476 | Receiver Standby, SPST Slide |
| | Cabinet | 66C772 | |
| | Back Cover | 32C513 | |
| | Bottom Cover | 32C501 | |
| | Dial Scale | 83C406 | |
| | Dial Window | 22B311 | |
| | Pointer | 82A216 | Bandspread |
| | Pointer | 82A217 | Tuning |
| | Knob | 15A049 | Band Selector and Off/on Volume (2 Used) |
| | Knob | 15A048 | Tuning and Bandspread (2 Used) |

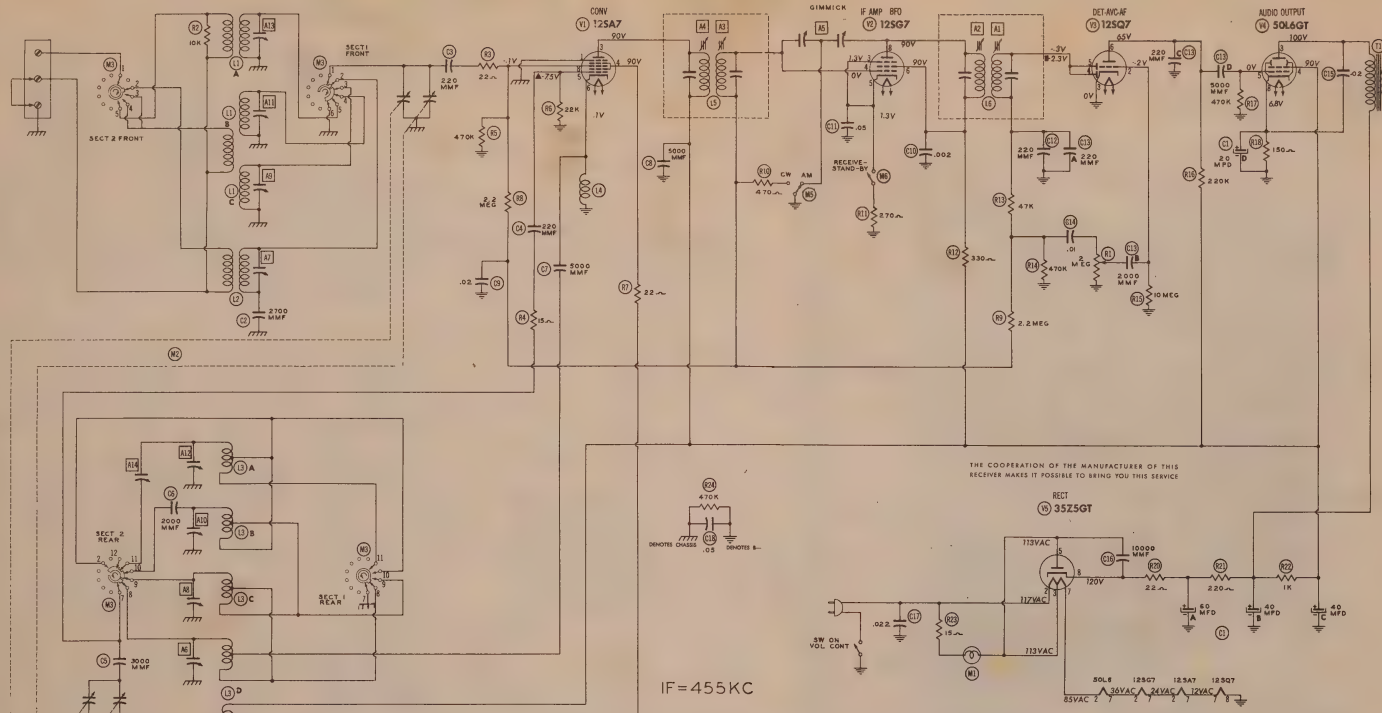
## CHASSIS—BOTTOM VIEW








HALLICRAFTERS MODEL S-38C (Run 2)

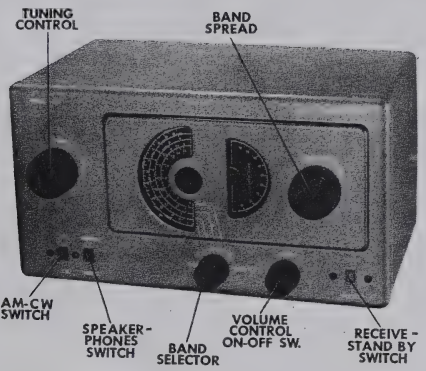



RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 |
|---|---|---|---|---|---|---|---|---|---|
| V 1 | 12SA7 | 470KΩ | 24Ω | †1.2KΩ | †1.2KΩ | 22KΩ | 9Ω | 12Ω | 430KΩ<br>■390KΩ |
| V 2 | 12SQ7 | 470KΩ | 36Ω | 270Ω | 1.3Meg<br>■470Ω | 270Ω<br>477KΩ | †1.6KΩ | 24Ω | †1.6KΩ |
| V 3 | 12SQ7 | 470KΩ | 10 Meg | 0Ω | ■437KΩ | ■437KΩ | †220KΩ | 12Ω | 0Ω |
| V 4 | 50L6GT | INF | 84Ω | †400Ω | †1.2KΩ | 470KΩ | 0Ω | 36Ω | 150Ω |
| V 5 | 35Z5GT | INF | 118Ω | 113Ω | 110Ω | 113Ω | 0Ω | 84Ω | 1.2Meg |

ALL MEASUREMENTS TAKEN IN "BAND 1" POSITION
ALL MEASUREMENTS TAKEN IN "AM" POSITION UNLESS OTHERWISE SPECIFIED
■ MEASURED IN "CW" POSITION
† MEASURED FROM PIN 8 OF V5
▲ TAKEN WITH VACUUM TUBE VOLTMETER

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.




HALLICRAFTERS
MODEL S-38C (Run 2)

| | |
|---|---|
| TRADE NAME | Hallicrafters Model S-38C (Run 2) |
| MANUFACTURER | Hallicrafters Co., 4401 W. 5th. Ave., Chicago 24, Ill. |
| TYPE SET | AC-DC Operated Multi-Band AM Communications Superheterodyne |
| TUBES (Five) | Types 12SA7 Conv., 12SG7 IF Amp., 12SQ7 Det.-AVC-AF Amp., 50L6GT Audio Output, 35Z5GT Rectifier |
| POWER SUPPLY | 105-125 Volts AC-DC RATING .23 Amp. @ 117 Volts AC |
| TUNING RANGE— | Band #1 (.54-1.7MC), Band #2 (1.7-5MC), Band #3 (5-14MC), Band #4 (14-32MC) |

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Set AM-CW switch to AM (except for BFO adjustment), SPEAKER-PHONES switch to SPEAKER, RECEIVE-STANDBY switch at RECEIVE and BANDSPREAD control at 0.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Turn bandspread capacitor plates fully open and set bandspread pointer straight up, to the zero position on bandspread dial.
Turn main truning gang fully open and set pointer straight up.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 1. | .01MFD | High side to stator Plates of front section of tuning gang. Low side to chassis. | 455 KC (400~ Mod) | 1 | 1.0MC | Across voice coil | A1, A2, A3, A4 | Adjust for maximum output. |
| 2. | " | " | 455 KC (Unmod.) | " | " | " | A5 | Vary position of wire "gimmick" at pins 4 and 8 of V2 for maximum beat. (Set AM-CW switch to CW for this step only). Adjust A5 (gimmick) only if weak beat note indicates need. |
| 3. | RTMA Fig. 1 | High side thru dummy to left hand antenna terminal (viewed from rear of chassis). Low side to chassis. | 30MC (400~Mod) | 4 | 30MC | " | A6, A7 | Adjust in order given for maximum output. |
| 4. | " | " | 14MC | 3 | 14MC | " | A8, A9 | " |
| 5. | " | " | 5MC | 2 | 5MC | " | A10, A11 | " |
| 6. | " | " | 1500 KC | 1 | 1.5MC | " | A12, A13 | " |
| 7. | " | " | 600 KC | 1 | .6MC | " | A14 | Adjust for maximum output. |

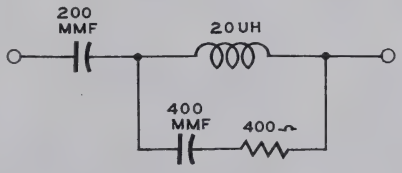



FIG. 1

# PARTS LIST AND DESCRIPTIONS



## TUBES (SYLVANIA or Equivalent)

| ITEM No. | USE | REPLACEMENT DATA | | RMA BASE TYPE | NOTES |
|---|---|---|---|---|---|
| | | Hallicrafters PART No. | STANDARD REPLACEMENT | | |
| V1 | Converter | 90X12SA7 | 12SA7 | 8H | |
| V2 | IF Amp. -BFO | 90X12SG7 | 12SG7 | 8BK | |
| V3 | Det. -AVC-AF Amp. | 90X12SQ7 | 12SQ7 | 8Q | |
| V4 | Audio Output | 90X50L6GT | 50L6GT | 7S | |
| V5 | Rectifier | 90X35Z5GT | 35Z5GT | 6AD | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT | Hallicrafters PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ERIE PART No. | MALLORY PART No. | SPRAGUE PART No. | |
| C1A | 60 | 150 | 45B091 | PRS101OD4A | | EZ55515C | | 3N532 | TVA-3436 | |
| B | 40 | 150 | | PRS150/40 | | | | TC49 | TVA-1413 | |
| C | 40 | 150 | | | | | | | | |
| D | 20 | 25 | | | | | | | | |
| C2 | 2700 | 500 | 47X30B272K | | | | | | | |
| C3 | 220 | 500 | 47X20B221K | 1469-00025 | | 5R5T25 | | MCB240 | MS-325 | |
| C4 | 220 | 500 | 47X20B221K | 1469-00025 | | 5R5T25 | | MCB240 | MS-325 | |
| C5 | 3000 | 500 | 47X30B302J | 1464-003 | | 1R5D3 | | MCB461 | MS-23 | |
| C6 | 2200 | 500 | 47X30B222J | | | | | | | |
| C7 | 5000 | | 47A168 | BPD-005 | DD-502 | TM5D5 | B11-005 | DC-525 | 5HK-D5 | |
| C8 | 5000 | | 47A168 | BPD-005 | DD-502 | TM5D5 | B11-005 | DC-525 | 5HK-D5 | |
| C9 | .02 | 600 | 46AY203J | P688-02 | DF-203 | PTE6S2 | | PT612 | 6TM-S2 | |
| C10 | .002 | 600 | 46AZ202F | P688-002 | D6-202 | PTE6D2 | GP2-333-202 | PT622 | 6TM-D2 | |
| C11 | .05 | 200 | 46AU503J | P288-05 | DF-503 | PJ2S5 | | PT415 | 2TM-S5 | |
| C12 | 220 | 500 | 47XZ0B221K | 1468-00025 | D6-221 | 5W5T25 | GP2K-221 | | 1FM-325 | |
| C13A | 220 | | | SI220 | D6-221 | 5W5T25 | GP2K-221 | UC-5322 | | |
| B | 2000 | | 46A151 | BPD-002 | DD-202 | TM5D2 | B01-002 | DC-522 | 34C3 | |
| C | 220 | | | SI220 | D6-221 | 5W5T25 | GP2K-221 | UC-5322 | | |
| D | 5000 | | | BPD-005 | DD-502 | TM5D5 | B11-005 | DC-525 | | |
| C14 | .01 | 600 | 46AZ103J | P688-01 | D6-103 | PTE6S1 | GP2-333-103 | PT611 | 6TM-S1 | |
| C15 | .02 | 600 | 46AY203J | P688-02 | DF-203 | PTE6S2 | | PT612 | 6TM-S2 | |
| C16 | 10000 | | 47A217 | BPD-01 | DD-103 | TM5S1 | B21-01 | DC-511 | 5HK-S1 | |
| C17 | .022 | 600 | 46BR203L6 | 689ZGXY-02 | | PJ6S2 | | PT6122 | 6TM-S22 | |
| C18 | .05 | 600 | 46AY503J | P688-05 | | PTE6S5 | | PT615 | 6TM-S5 | |

## CONTROLS

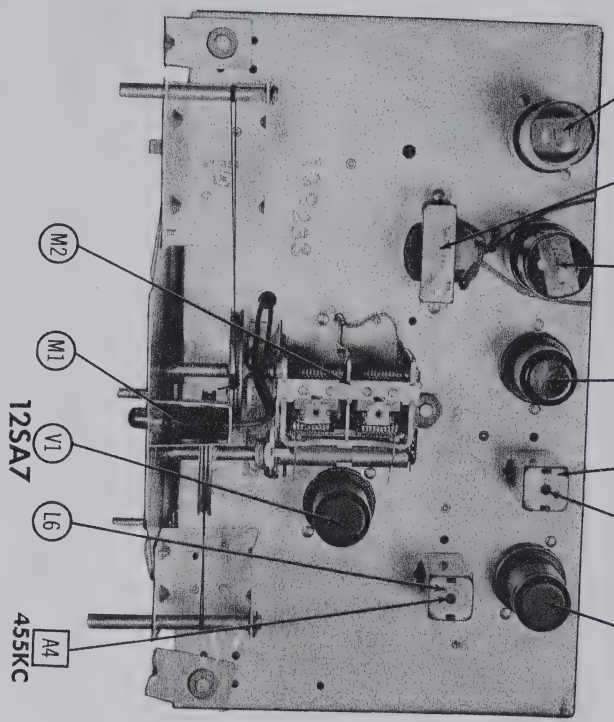
| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | Hallicrafters PART No. | IRC PART No. | CLAROSTAT PART No. | CENTRALAB PART No. | MALLORY PART No. | |
| R1A | 2 Meg | ½ | 25B896 | QI3-139 | AG-66-Z | B-76-S | U-55 | Volume |
| B | Shaft | | Not Req. | Not Req. | RS-2 | Not Req. | Not Req. | Attach to R1A |
| C | Switch | | Not Req. | 76-1 | SWB | Not Req. | US-26 | Attach to R1A |

## RESISTORS

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | Hallicrafters PART No. | IRC PART No. | |
| R2 | 10KΩ | ½ | 23X20X103M | BTS-10K | |
| R3 | 22Ω | ½ | 23X20X220M | | |
| R4 | 15Ω | ½ | 23X20X150M | | |
| R5 | 470KΩ | ½ | 23X20X474M | BTS-470K | |
| R6 | 22KΩ | ½ | 23X20X223M | BTS-22K | |
| R7 | 22Ω2 | ½ | 23X20X220M | | |
| R8 | 2.2Meg | ½ | 23X20X225M | BTS-2.2Meg | |
| R9 | 2.2Meg | ½ | 23X20X225M | BTS-2.2Meg | |
| R10 | 470Ω | ½ | 23X20X471K | BTS-470 | |
| R11 | 270Ω | ½ | 23X20X271K | BTS-270 | |
| R12 | 330Ω | ½ | 23X20X331M | BTS-330 | |
| R13 | 47KΩ | ½ | 23X20X473M | BTS-47K | |

| ITEM No. | RATING | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|
| | OHMS | WATT | PART No. | IRC PART No. | |
| R14 | 470KΩ | ½ | 23X20X474M | BTS-470K | |
| R15 | 10 Meg | ½ | 23X20X106M | BTS-10 Meg | |
| R16 | 220KΩ | ½ | 23X20X224M | BTS-220K | |
| R17 | 470KΩ | ½ | 23X20X474M | BTS-470K | |
| R18 | 150Ω | ½ | 23X20X151K | BTS-150 | |
| R19 | 15Ω | ½ | 23X20X150M | | |
| R20 | 22Ω | ½ | 23X20X220M | | |
| R21 | 220Ω | 1 | 23X30X221M | BTA-220 | |
| R22 | 1000Ω | ½ | 23X20X102M | BTS-1000 | |
| R23 | 15Ω | ½ | 23X20X150M | | |
| R24 | 470KΩ | ½ | 23X20X474M | BTS-470K | |

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | RATING | | | | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | IMPEDANCE | | DC RES. | | Hallicrafters PART No. | STANCOR PART No. | MERIT PART No. | CHICAGO PART No. | TRIAD PART No. | |
| | PRI. | SEC. | PRI. | SEC. | | | | | | |
| T1 | 2KΩ | 3.2Ω | 160Ω | 2.78Ω tap @ .81Ω | 55A127 | | | | | |

## SPEAKER

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | NOTES |
|---|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | Hallicrafters PART No. | JENSEN PART No. | QUAM PART No. | |
| SP1 | 5" | PM | 3.2Ω | 85C030 | ST-105 Mod. P5-X | 5A1 | |

## COILS (RF-IF)

| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | | NOTES |
|---|---|---|---|---|---|---|---|
| | | PRI. | SEC. | Hallicrafters PART No. | MERIT PART No. | IRC PART No. | |
| L1A | BC Ant. Coil | 28Ω | 4.2Ω | 51C821 | | | Band 1. |
| B | Sw. Ant. Coil | .8Ω | 1.1Ω | | | | Band 2; Part of L1A. |
| C | Sw. Ant. Coil Secondary | | .1Ω | | | | Band 3; Part of L1A. |
| L2 | Sw. Ant. Coil | .3Ω | .1Ω | 51B1015 | | | Band 4 |
| L3A | BC. Osc. Coil | 2.4Ω | | 51C822 | | | Band 1; Tapped at 2.2Ω. |
| B | Sw. Osc. Coil | 2.7Ω | | | | | Band 2; Tapped at 2.2Ω; Part of L3A. |
| C | Sw. Osc. Coil | 0Ω | | | | | Band 3; Part of L3A. |
| D | Sw. Osc. Coil | 0Ω | 0Ω | | | | Band 4; Part of L3A. |
| L4 | Cathode Choke | 9Ω | | 53A107 | TV-188 | | 540 Microhenries. |
| L5 | Input IF | 14.5Ω | 14Ω | 50C531 | BC-352 | | |
| L6 | Output IF | 13Ω | 13Ω | 50C532 | BC-353 | | |

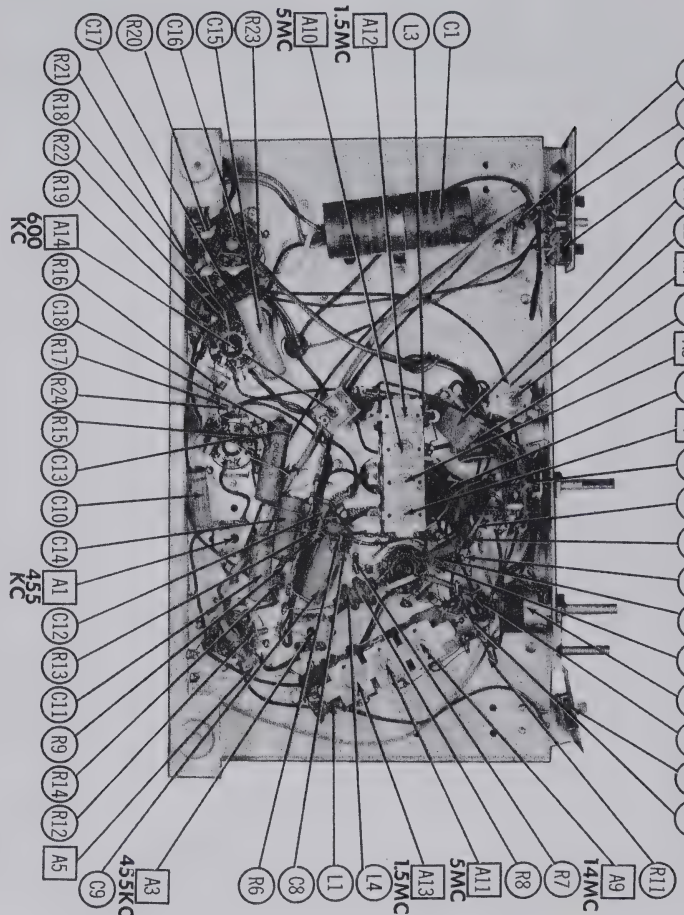
## DIAL LIGHTS

| ITEM No. | BASE TYPE | VOLTS | AMPS. | BEAD COLOR | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|---|---|
| | | | | | Hallicrafters PART No. | | |
| M1 | Bayonet | 6-8 | .15 | Brown | 39A004 | | Type No. 47. |

## MISCELLANEOUS

| ITEM No. | PART NAME | Hallicrafters PART No. | NOTES |
|---|---|---|---|
| M2 | Tuning Capacitor | 48C162-1 | 12-461MMF, 12-461MMF |
| M3 | Switch | 60C393 | Band Selector |
| M4 | Switch | 60A477 | Speaker-Phones Selector, SPDT Slide |
| M5 | Switch | 60A477 | AM-CW Selector, SPDT Slide |
| M6 | Switch | 60A476 | Receiver Standby, SPST Slide |
| | Cabinet | 66C772 | |
| | Back Cover | 32C513 | |
| | Bottom Cover | 32C501 | |
| | Dial Scale | 83C406 | |
| | Dial Window | 22B311 | |
| | Pointer | 82A216 | Bandspread |
| | Pointer | 82A217 | Tuning |
| | Knob | 15A049 | Band Selector and Off/on Volume (2 Used) |
| | Knob | 15A048 | Tuning and Bandspread (2 Used) |

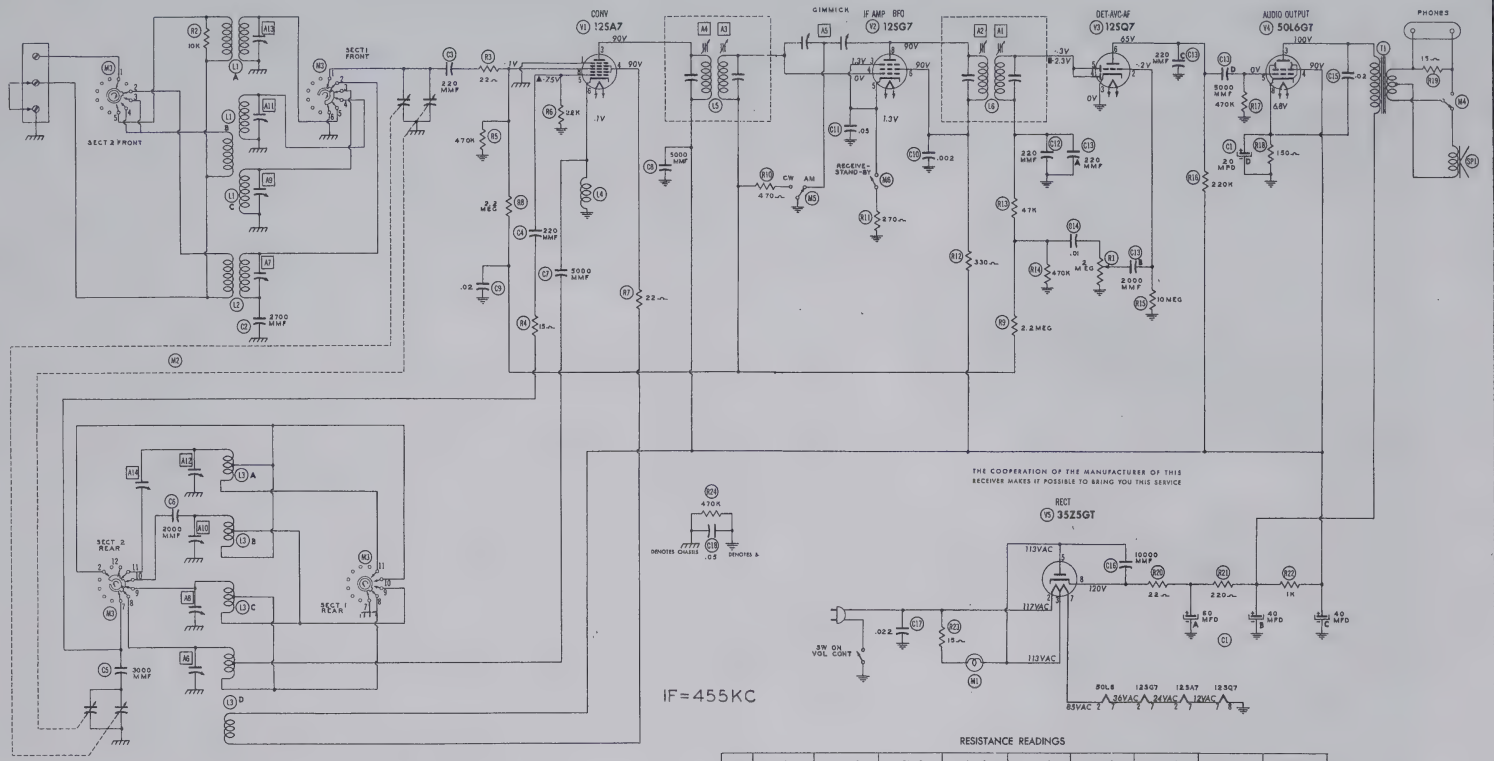
# CHASSIS—BOTTOM VIEW








HALLICRAFTERS MODEL S-38C (Run 2)





DIAL CORD DRIVE

RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 |
|---|---|---|---|---|---|---|---|---|---|
| V 1 | 12SA7 | 470KΩ | 24Ω | †1.2KΩ | †1.2KΩ | 22KΩ | 9Ω | 12Ω | 430KΩ<br>■390KΩ |
| V 2 | 12SG7 | 470KΩ | 36Ω | 270Ω | 1.3Meg<br>■470Ω | 270Ω | †1.6KΩ | 24Ω | †1.6KΩ |
| V 3 | 12SQ7 | 470KΩ | 10 Meg | 0Ω | 477KΩ<br>■437KΩ | 477KΩ<br>■437KΩ | †220KΩ | 12Ω | 0Ω |
| V 4 | 50L6GT | INF | 84Ω | †400Ω | †1.2KΩ | 470KΩ | 0Ω | 36Ω | 150Ω |
| V 5 | 35Z5GT | INF | 118Ω | 113Ω | 110Ω | 113Ω | 0Ω | 84Ω | 1.2Meg |

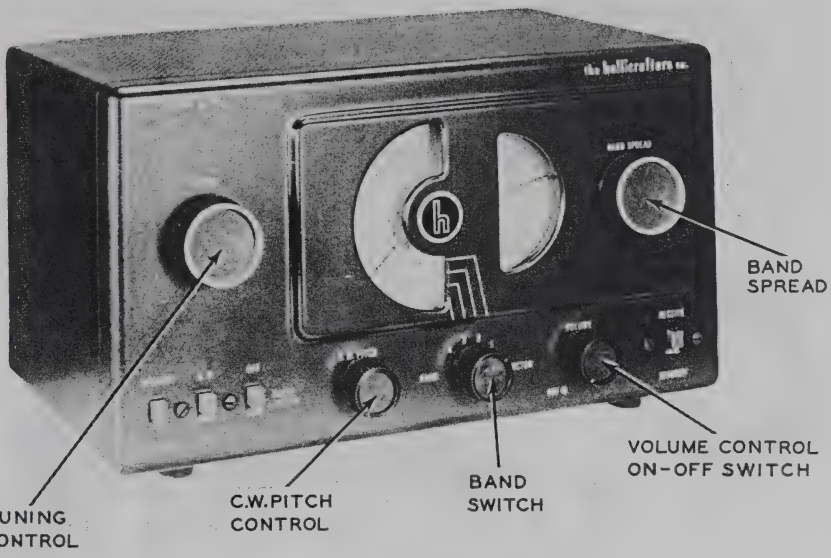
ALL MEASUREMENTS TAKEN IN "BAND 1" POSITION
ALL MEASUREMENTS TAKEN IN "AM" POSITION UNLESS OTHERWISE SPECIFIED
■ MEASURED IN "CW" POSITION
† MEASURED FROM PIN 8 OF V5
▲ TAKEN WITH VACUUM TUBE VOLTMETER

A PHOTOFACT STANDARD NOTATION SCHEMATIC





1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.




HALLICRAFTERS MODEL S-38

| | |
|---|---|
| TRADE NAME | Hallicrafters Model S-38 |
| MANUFACTURER | Hallicrafters Co., 2611 S. Indiana Ave., Chicago, Illinois |
| TYPE SET | AC - DC Superheterodyne - 4 Band Communications Receiver |
| TUBES (SIX) | Types 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 12SQ7GT BFO-ANL, 35L6GT Power Output, 35Z5GT Rectifier. |
| POWER SUPPLY | 105-125 Volts AC-DC Rating .245 Amps. @ 117 Volts AC |
| TUNING RANGE | Band #1- 540-1650KC Band #2- 1650KC-5.0MC Band #3 5.0MC-14.5MC Band #4- 13.5MC-32.0MC |

ALIGNMENT INSTRUCTIONS

| DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| NONE | High side to stator plates of rear section of tuning gang. Low side to "G" on antenna strip. | 455KC | "1" | 1000KC | Across voice coil | A1,A2, A3,A4. | Adjust for maximum output. Repeat adjustment. |
| " | " | " | " | " | " | BFO Slug | Turn off 400~ modulation on signal generator. Set CW/AM switch at CW. Remove pitch control knob and adjust slotted screw shaft for zero beat. |
| 390Ω carbon res. | High side to "A1" on antenna strip. Low side to "G" on on antenna strip. | 30MC | "4" | 30MC | " | A5,A6 | Adjust for maximum output. Rock gang slightly when adjusting A6. |
| " | " | 14MC | "3" | 14MC | " | A7,A8 | Adjust for maximum output. Rock gang slightly when adjusting A8. |
| " | " | 5MC | "2" | 5MC | " | A9 | Adjust for maximum output. |
| " | " | 1.8MC | " | 1.8MC | " | A10 | Adjust for maximum output and repeat A9 at 5MC. |
| " | " | 5MC | " | 5MC | " | A11 | Adjust for maximum output. Rock gang slightly. |
| " | " | 1500KC | "1" | 1500KC | " | A12 | Adjust for maximum output. |
| " | " | 600KC | " | 600KC | " | A13 | Adjust for maximum output and repeat A12 at 1500KC. |
| " | " | 1500KC | " | 1500KC | " | A14 | Adjust for maximum output. Rock Gang Slightly. |

Set receiver controls as follows: "Speaker-Phones" switch at speaker; Volume control at full clockwise (maximum); CW/AM switch at "AM" (except for BFO adjustment); noise limiter switch at "off"; bandspread tuning at "0" (min. cap.); "standby-receive" switch at receive. Adjust output of signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

**HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana**

# PARTS LIST AND DESCRIPTIONS

## TUBES

| ITEM No. | USE | REPLACEMENT DATA: HALLICRAFTERS PART No. | REPLACEMENT DATA: STANDARD REPLACEMENT | RMA BASE TYPE | INSTALLATION NOTES |
|---|---|---|---|---|---|
| 1 | Converter | 12SA7GT | 12SA7GT | 8AD | |
| 2 | IF Amp. | 12SK7GT | 12SK7GT | 8N | |
| 3 | Det.-AVC-AF | 12SQ7GT | 12SQ7GT | 8Q | |
| 4 | BFO-ANL | 12SQ7GT | 12SQ7GT | 8Q | |
| 5 | Power Output | 35L6GT | 35L6GT | 7AC | |
| 6 | Rectifier | 35Z5GT | 35Z5GT | 6AD | |

## CAPACITORS

**Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING: CAP. | RATING: VOLT | REPLACEMENT DATA: HALLICRAFTERS PART No. | MALLORY PART No. | SOLAR PART No. | SPRAGUE PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | IDENTIFICATION CODES AND INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|---|
| 7(A) | 40 | 150 | 45B091 | TC48 | DSB-40+30-150 | TA-430 | | EZ443150 | Filter - Red |
| (B) | 30 | 150 | | 3N583 | 20-25 | | | | " - Yellow |
| (C) | 30 | 150 | | | M-30-150 | UT-301 | | | " - " |
| (D) | 20 | 25 | | | | TA-25 | | | Cath. Bypass - Blue |
| 8 | .25 | 200 | 46AT254J | TP430 | S-4-25 | TC-2 | 484-.25 | DT4P25 | Line Isolating |
| 9 | .02 | 400 | 46AW203J | TP423 | S-4-02 | TC-12 | 484-.02 | DT4S2 | Line Bypass |
| 10 | .02 | 600 | 46AY203J | TP412 | S-6-02 | TC-12 | 684-.02 | DT6S2 | 35L6 Plate Bypass |
| 11 | .01 | 400 | 46AW102J | TP421 | S-4-01 | TC-11 | 484-.01 | DT4S1 | Audio Coupling |
| 12 | .005 | 400 | 46AW502J | TP408 | S-4-005 | TC-25 | 484-.005 | DT4D5 | " " |
| 13 | .01 | 400 | 46AW102J | TP421 | S-4-01 | TC-11 | 484-.01 | DT4S1 | BFO Plate Bypass |
| 14 | .05 | 200 | 46AU503J | TP426 | S-4-05 | TC-15 | 484-.05 | DT4S5 | IF Cath. Bypass |
| 15 | .25 | 200 | 46AT254J | TP430 | S-4-25 | TC-2 | 484-.25 | DT4P25 | Screen Bypass |
| 16 | .02 | 400 | 46AW203J | TP423 | S-4-02 | TC-12 | 484-.02 | DT4S2 | AVC Filter |
| 17 | .01 | 600 | 46AY103J | TP410 | S-6-01 | TC-11 | 684-.01 | DT6S1 | Ant. Coupling |
| 18 | .05 | 200 | 46AU503J | TP426 | S-4-02 | TC-15 | 484-.05 | DT4S5 | RF Bypass Pwr. Supp. |
| 19 | 220 | 500 | CM202A221K | MC240 | MO.5-325 | 1FM-325 | 1468-.00025 | 5W5T25 | RF Bypass Diode |
| 20 | 220 | 500 | CM202A221K | MC240 | MO.5-325 | 1FM-325 | 1468-.00025 | 5W5T25 | BFO Grid Cap. |
| 21 | 470 | 500 | CM20A471K | MC245 | MO.5-35 | 1FM-35 | 1468-.0005 | 5W5T5 | BFO Fixed Trimmer |
| 22 | 2700 | 500 | CM30A272J | MC460 | MW.5-225 | | 1467-.0025 | 1W5D25 | RF Grid Cap. |
| 23 | 220 | 500 | CM20A221K | MC240 | MO.5-325 | 1FM-325 | 1468-.00025 | 5W5T25 | Osc. Grid Cap. |
| 24 | 2700 | 500 | CM30A271J | MC460 | MW.5-225 | | 1467-.0025 | 1W5D25 | Fixed Padder |
| 25 | 510 | 500 | | MC245 | MO.5-35 | 1FM-35 | 1468-.0005 | 5W5T5 | RF Bypass Rect. |
| 26 | 220 | 500 | CM20A221K | MC240 | MO.5-325 | 1FM-325 | 1468-.00025 | 5W5T25 | Audio Plate Bypass |
| 27 | 1200 | 500 | | MC255 | MO.3-21 | 1FM-21 | 1468-.001 | 1W5D1 | Fixed Trimmer |

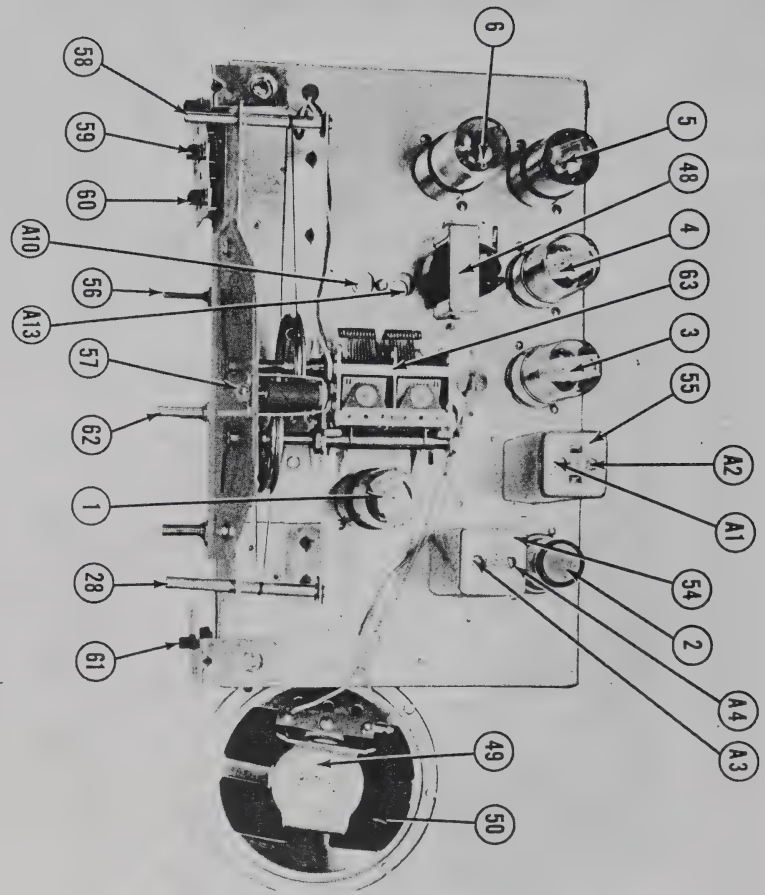
## CONTROLS

| ITEM No. | RATING: RESISTANCE | RATING: WATTS | REPLACEMENT DATA: HALLICRAFTERS PART No. | MALLORY PART No. | IRC PART No. | CLAROSTAT PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|
| 28(A) | 500KΩ | 1 | 25b094 | MA48 | D13-133 | AM-60-Z | Volume Control |
| (B) | Shaft | | Not Req. | Not Req. | A | RS-2 | Attach to 28A per instructions. |
| (C) | Switch | | " " | M26 | 41 | SW-A | " " " " " |

## RESISTORS

| ITEM No. | RATING: RESISTANCE | RATING: WATTS | REPLACEMENT DATA: HALLICRAFTERS PART No. | REPLACEMENT DATA: IRC PART No. | IDENTIFICATION CODES |
|---|---|---|---|---|---|
| 29 | 10KΩ | ½ | RC20AE103M | BTS-10K | Br.-Blk.-Or. Ant. Shunt |
| 30 | 470KΩ | ½ | RC20AE474M | BTS-470K | Yl.-Vi.-Yl. Converter Grid |
| 31 | 47Ω | ½ | RC20AE470M | BW-½-47 | Yl.-Vi.-Blk. Osc. Series Grid |
| 32 | 22KΩ | ½ | RC20AE223M | BTS-22K | Red-Red-Or. Osc. Grid |
| 33 | 2.2 Meg. | ½ | RC20AE225M | BTS-2.2 Meg. | Red-Red-Grn. AVC Network |
| 34 | 47KΩ | ½ | RC20AE473M | BTS-47K | Yl.-Vi.-Or. Diode Load |
| 35 | 470Ω | ½ | RC20AE471K | BTS-470 | Yl.-Vi.-Br. CW AVC Shorting |
| 36 | 47KΩ | ½ | RC20AE473M | BTS-47K | Yl.-Vi.-Or. BFO Grid |
| 37 | 10 Meg. | ½ | RC20AE106M | BT-10 Meg. | Br.-Blk.-Blue 1st AF Grid |
| 38 | 220KΩ | ½ | RC20AE224M | BTS-220K | Red-Red-Yl. 1st AF Plate Load |
| 39 | 470KΩ | ½ | RC20AE474M | BTS-470K | Yl.-Vi.-Yl. Output Grid |
| 40 | 150Ω | ½ | RC20AE151K | BW-½-150 | Br.-Grn.-Br. Output Cathode |
| 41 | 1000Ω | ½ | RC20AE102M | BTS-1000 | Br.-Blk.-Red Filter |
| 42 | 680Ω | 1 | RC30AF681M | BTA-680 | Blue-Gray-Br. " |

# CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS (CONTINUED)

| | | | | | | |
|---|---|---|---|---|---|---|
| 43 | 22Ω | ½ | RC20AE220M | BW-½-22 | Red-Red-Blk. Surge Limiter |
| 44 | 330Ω | ½ | RC20AE331M | BW-½-330 | Or.-Or.-Br. Pilot Light Shunt |
| 45 | 15Ω | ½ | RC20AE150M | BW-½-15 | Br.-Grn.-Blk. Headphone Shunt |
| 46 | 390Ω | ½ | RC20AE391K | BW-½-390 | Or.-White-Br. IF Cathode |
| 47 | 470Ω | ½ | RC20AE471K | BTS-470 | Yl.-Vi.-Br. BFO Plate Load |

## TRANSFORMER (OUTPUT)

| ITEM No. | RATING | | | | REPLACEMENT DATA | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | IMPEDANCE | | DC RES. | | HALLI-CRAFTERS PART No. | STANCOR PART No. | THORDAR'N PART No. | | |
| | PRI. | SEC. | PRI. | SEC. | | | | | |
| 45 | 3180Ω | 3.1Ω | 170Ω | .6Ω | 55A075 | A-3673 | T-13S421 | | †Drill new mounting holes. |

## SPEAKER

| ITEM No. | RATINGS | | REPLACEMENT DATA | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|
| | FIELD | VC IMP. | HALLICRAFTERS PART No. | JENSEN PART No. | | |
| 49 | PM | 3.1Ω | 85C035 | ST-105 | | |
| | CONE DIA. | VC DIA. | | | | |
| 50 | 4-9/16" | 5/8" | NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT. | | | |

## R F COILS

| ITEM No. | USE | DC RES. | | REPLACEMENT DATA | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|
| | | PRI. | SEC. | HALLI-CRAFTERS PART No. | MEISSNER PART No. | |
| 51(A) | Band 1 Ant. Coil | 28Ω | 4.5Ω | 51C821* | | *Wound on same coil form with Bands 2,3. |
| 51(B) | " 2 " " | 1Ω | 1Ω | | | " " " " " " " " 1,3. |
| 51(C) | " 3 " " | 1Ω | .1Ω | | | " " " " " " " " 1,2. |
| 52 | " 4 " " | .5Ω | 0Ω | 51C818 | | |
| 53(A) | " Osc. " | | 2.8Ω | 51C822** | | **Wound on coil form with bands 2,3,4. |
| 53(B) | " 2 " " | | 1Ω | | | " " " " " " " " 1,3,4. |
| 53(C) | " 3 " " | | 0Ω | | | " " " " " " " " 1,2,4. |
| 53(D) | " 4 " " | .1Ω | 0Ω | | | " " " " " " " " 1,2,3. |
| 54 | Input 1F | 27Ω | 25.5Ω | 50C183 | 16-5658 | |
| 55 | Output 1F | 24.5Ω | 24.5Ω | 50B184 | 16-6660 | |
| 56 | BFO Osc. Coil | | 6Ω | 54B031 | | |

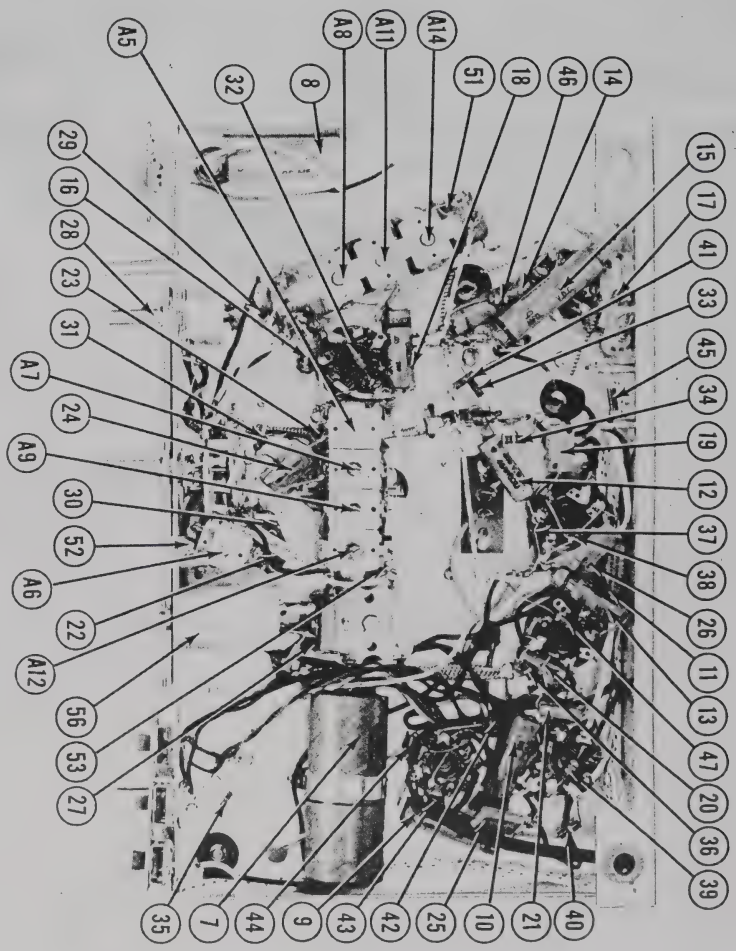
## DIAL LIGHT

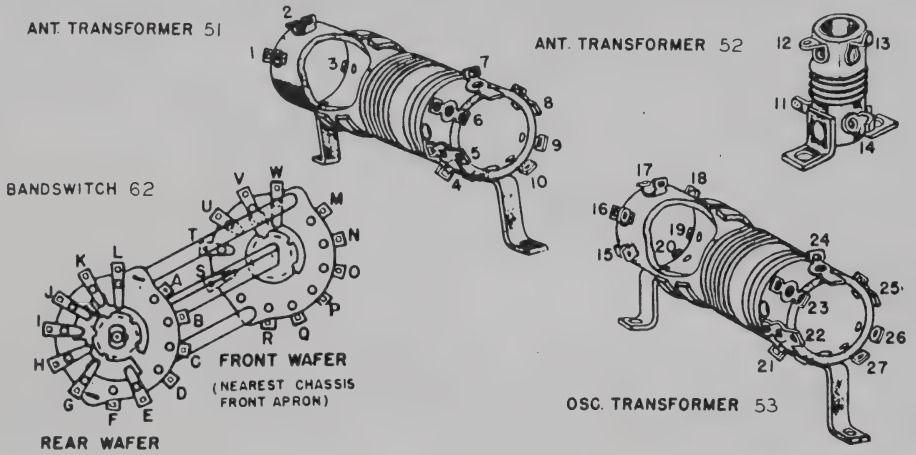
| ITEM No. | BASE TYPE | VOLTS | AMPS. | BEAD COLOR | REPLACEMENT DATA | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|
| | | | | | HALLI-CRAFTERS PART No. | | |
| 57 | Bayonet | 6-8 | 0.15 | Brown | 39A004 | | Type 47 |

## MISCELLANEOUS

| ITEM No. | PART NAME | HALLI-CRAFTERS PART No. | NOTES |
|---|---|---|---|
| 58 | Switch | 60A243 | "SPEAKER-PHONES" SPDT |
| 59 | " | 60A245 | "AM-CW" SPDT |
| 60 | " | 60A244 | "NOISE LIMITER" SPST |
| 61 | " | 60A244 | "RECEIVE STANDBY" SPST |
| 62 | " | 60A240 | 4 Position Bandswitch |
| 63 | Tuning Cap. | 48C132 | 2 Gang Main & Band Spread Var. Cap. |
| | Trimmer | 44B159 | A5,A7,A9,A12 Osc. Adjustments |
| | " | 44B129 | A8,A11,A14 Ant. Adjustments |
| A6 | " | 44A039 | Antenna Trimmer |
| | " | 44A152 | A10,A13 Osc. Padders |
| | Knob | 15A049 | Volume and Band Switch |
| | " | 15A056 | C.W. Pitch Control |
| | " | 15A047 | Tuning and Bandspread Controls |
| | Calibrated Dial | 83B257 | |
| | Dial Window | 22B157 | Glass |

# CHASSIS—BOTTOM VIEW

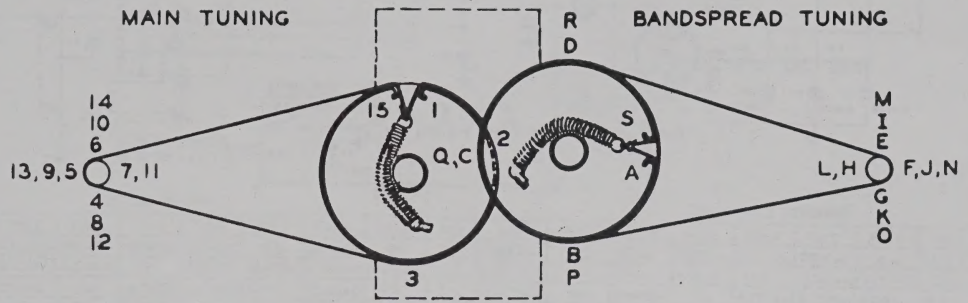





# COIL CONNECTIONS

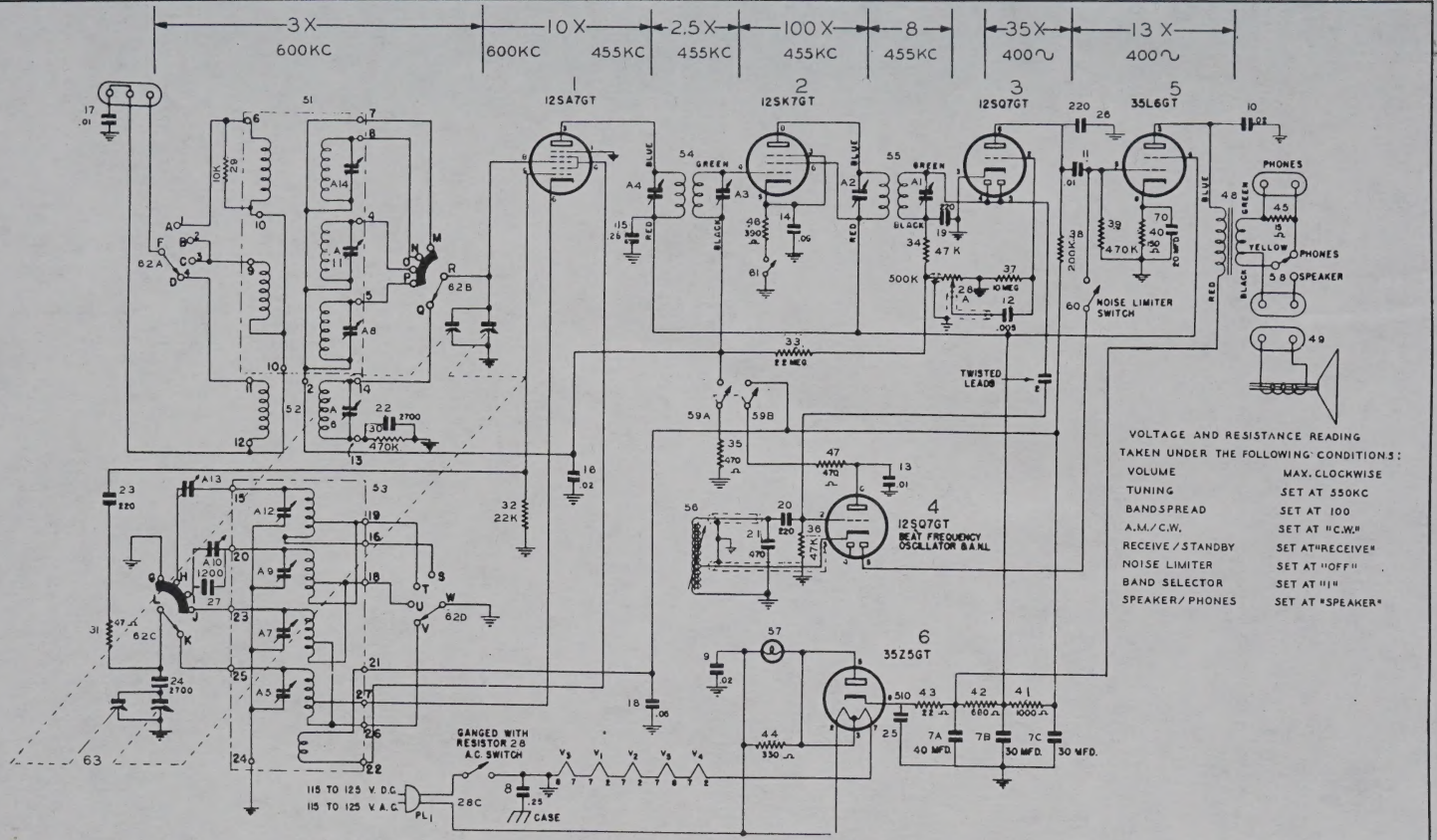
To restring the main tuning dial cord, cut a 14" length of 30 lb. test dial cord and tie one end of the tension spring of the main tuning capacitor drive pulley at position "1" on the diagram. Following the numbers 1 through 15, wind the cord on the pulley and knob drive shaft. At position "15," stretch the tension spring and tie the cord securely. Cut off the excess cord. Note that two complete turns are wound on the knob drive shaft.

To restring the bandspread tuning dial cord, cut a 16" length of dial cord and follow the procedure as explained above, except start at position "A" on the diagram and proceed through position "S". Note that the knob drive shaft has two complete turns.




TUNING CAPACITOR FULLY CLOSED (BOTH SECTIONS).

# DIAL STRINGING PROCEDURE




VOLTAGE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 12SA7GT | 0V. | 25.5VAC | 100V.DC | 90V.DC | -5.5V.DC | 0V. | 12.5VAC | 0V. |
| 2 | 12SK7GT | 0V. | 37.5VAC | 3.5V.DC | 0V. | 3.5V.DC | 100V.DC | 25.5VAC | 100V.DC |
| 3 | 12SQ7GT | 0V. | -7V.DC | 0V. | -47V.DC | -47V.DC | 57V.DC | 12.5VAC | 0V. |
| 4 | 12SQ7GT | 0V. | 0V. | 0V. | 0V. | 0V. | 100V.DC | 37.5VAC | 49.5VAC |
| 5 | 35L6GT | 0V. | 85V.AC | 109V.DC | 100V.DC | 0V. | 0V. | 49.5VAC | 6.1V.DC |
| 6 | 35Z5GT | 116V.DC | 117V.AC | 112V.AC | 116V.DC | 112V.AC | 0V. | 85V.AC | 117V.DC |

RESISTANCE READINGS

| Item | Tube | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 12SA7GT | 0Ω | 27Ω | 125KΩ | 125KΩ | 20KΩ | 4Ω | 13.5Ω | 450Ω |
| 2 | 12SK7GT | 0Ω | 39Ω | 350Ω | 450Ω | 350Ω | 125KΩ | 27Ω | 125KΩ |
| 3 | 12SQ7GT | 0Ω | 7.5MEG | 0Ω | 420KΩ | 420KΩ | 450KΩ | 13.5Ω | 0Ω |
| 4 | 12SQ7GT | 0Ω | .2Ω | 2Ω | INF | INF | 125KΩ | 39Ω | 52Ω |
| 5 | 35L6GT | 0Ω | 82Ω | 125KΩ | 125KΩ | 425KΩ | INF | 52Ω | 145Ω |
| 6 | 35Z5GT | 125KΩ | 105Ω | 105Ω | 125KΩ | 105Ω | 0Ω | 82Ω | 125KΩ |

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.